The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 3 CHICAGO, ILLINOIS JULY 21, 1917

PROBLEM OF UNNECESSARY OPERATIONS AND OF INCOMPETENT SURGEONS *

ARTHUR DEAN BEVAN, M.D.

CHICAGO

I desire to present briefly an outline of a problem which I believe confronts the medical profession and which demands careful investigation and action. I refer to the problem of bad surgical therapy, of unnecessary surgical operations and of incompetent surgeons. In my work as chairman of the Council on Medical Education, and in my position as teacher of surgery and as attending surgeon in a teaching hospital, I have during the last ten years been much impressed with the fact that there does exist this definite problem which the American medical profession should face. My conception is that this problem should not be attacked by any individual, or by any local or special medical society, but should be investigated by the organized medical profession of the entire country through the council or committee best suited to do this work. This problem should be attacked without any sensationalism, certainly without any unnecessary publicity, and should be looked on as a piece of housecleaning that should be done by the American Medical Association. In order to bring this subject clearly before the profession, let me attempt to draw a picture of the conditions as I believe them to exist today.

First, let me state that within the last thirty years, by the advances made in the underlying medical sciences and in the sciences of diagnosis and therapy, clinical medicine and clinical surgery have been placed on a scientific basis, and that owing to these advances it is possible today to place the practice of medicine and the practice of surgery on a thoroughly scientific basis. It is clearly the desire of the organized medical profession of this country, the American Medical Association, to place medical education and the practice of medicine and surgery on a scientific basis, and in the last fifteen years this organization has made wonderful strides in this direction. I believe that the American Medical Association has done more in the last fifteen years to improve the standards of medical education and medical practice than has been accomplished before by any organized group of professional men in any country. It is clearly the desire and purpose of the American medical profession to secure for the people of this country all of the benefits and possibilities that the modern science of medicine can afford. I believe not only that this is the object of the American Medical Association as an organization, but also that the great majority of the members of this organization are individually doing their best to accomplish these desired results.

In the rapid evolution of medicine into a science, certain glaring defects in medical practice became evident. Among these has stood out particularly the weakness of drug therapy of the old time practice. The American Medical Association has recognized this weakness fully and is doing more probably than any medical organization in the world through its Council on Pharmacology and Chemistry to place drug therapy on a sound, scientific basis. No such organized effort, however, has as yet been made to investigate the existing status of surgical therapy to point out its weakness, and to place it on a thoroughly acceptable basis. In the last fifteen or twenty years the practice of medicine has become more and more surgical, new surgical fields one after the other have been explored and carefully cultivated, and new operative procedures have been developed and perfected. As a result, thousands and hundreds of thousands of people have been greatly benefited by properly indicated and properly performed operations in appendicitis, peritonitis, gallstone disease, lesions of the stomach and kidneys, and in many other fields. The amount of surgical operating has increased manyfold and will continue to increase because there are thousands of people who still lack the benefits that could be given to them by modern surgical therapy.

This great increase in surgical operations and operating surgeons has brought with it this new problem of unnecessary operations and of incompetent surgeons. I should like to make perfectly clear in this presentation that I believe that the great majority of operating surgeons in this country are competent, and that the vast proportion of operations performed are necessary and desirable. On the other hand, those who are in touch actively with surgical therapy, who see a large number of surgical cases and who come in contact with a large number of men doing surgical operations cannot but be impressed with the fact that there is a certain considerable number of operations being performed in this country that are unnecessary and unwarranted, and that there is a considerable number of men operating who are not qualified to do the work.

My impression is that this condition is due to three causes, ignorance, dishonesty and bad judgment, sometimes bad judgment amounting almost to an obsession; legally when a surgeon undertakes the treatment of a case he makes a contract with the patient which, although not written, is in the eyes of the law just as binding, and in that contract he agrees to give the

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

patient the benefit of the knowledge possessed by the "professors" of the science and art of medicine and surgery in the place and at the time the services are rendered. He agrees also to give to the patient the benefit of his best judgment and due diligence, and the benefit of established and accepted methods of practice. As far as honesty is concerned, a good rule for a surgeon to follow in his practice is the golden rule. He should never do an operation on a patient which he would not want to have done on himself under the same conditions. As far as good judgment, on the one hand, and surgical tangents and obsessions, on the other, are concerned, it is necessary for us all to remember that the practice of surgery should be the practice of common sense. The three absolutely essential characteristics of the safe surgeon are honesty, good judgment and scientific training.

What shall be done by the medical profession about the unnecessary and unwarranted surgical operations done as a result of ignorance in unattached and uncontrolled hospitals by poorly trained men? What shall be done about the unnecessary operations done by dishonest men for a fee; the unnecessary appendix operations done for imaginary appendicitis, the unnecessary fixations of the kidney; the unnecessary amputations of the breast done for benign or imaginary breast tumors; the unnecessary operations on female genitals, on the tonsils, on the gallbladder, etc.? What shall be done about the operations that are due to lack of good judgment or to misguided enthusiasm; the unnecessary operations on fractures; the fantastic operations for intestinal stasis without gross pathology; operations for supposed insufficiency of the ileocecal valve based on misinterpreted Roentgen evidence, intestinal anastomosis or resections of the large intestine for the cure of epilepsy? These are problems which we should meet frankly, investigate fully and find means to correct, and this should be done by some properly qualified instrument of the American Medical Association, possibly by creating a committee or council to do with surgical therapy what the Council on Pharmacy and Chemistry has done and is doing with drug therapy. I believe that this problem should be investigated and if possible corrected by the organized medical profession, that this work should be done by and within the profession itself in the interests of the profession and in the interests of the community. This problem of unnecessary operations and incompetent surgeons is a serious matter both for the medical profession and for the public. Its existence should be frankly admitted and steps taken by and within the profession to reduce bad surgical therapy to a minimum.

Specifically, how is this to be accomplished? The answer has seemed to me in a general way to handle this problem of surgical therapy as the American Medical Association has handled and is handling the problem of medical therapy, that is, by a committee or council on surgical therapy, the business of which will be to analyze and report on these problems from time to time as they arise.

There are at least two large problems involved in this whole matter, (1) that of unnecessary and unwarranted operations, and (2) that of operations done by incompetent men.

1. In a general way it is evident that one of the best means of combating the evil of unnecessary and unwarranted operations is that of attacking surgical problems as pieces of clinical research, not from a single point of view and not by a single man, but as pieces of joint study from the point of view of the several specialists whose fields are involved in the problem and who may be of service in finding the right solution. Let us say, as an example, the study of so-called intestinal stasis and its surgical therapy. This should be a joint study by the internist, the neurologist, the physiologist, the pathologist, the roentgenologist and the surgeon, and when this is done by a competent group of men there will be little danger of going off on a tangent, and arriving at erroneous conclusions.

2. The problem of operations done by incompetent men is largely an educational, and in a sense also a moral question. The American Medical Association could through such a council as I suggest carry on a propaganda pointing out the necessity of thorough and special training for the men who are to do general surgery or the work in any of the surgical specialties. This would mean at least the graduation from a first class medical school, the serving in a hospital as an intern, and the doing of a certain amount of postgraduate work in surgery, best as assistant to some competent surgeon, before entering independent practice.

Some may say, well, just such a propaganda is already being carried on by the American College of Surgeons. In reply to this I would say that that is not enough. Admirable as the work of the American College of Surgeons may prove to be in the future, it is limited to a comparatively small group of men. We need in solving a great problem of this kind the support of the entire profession, and that can be obtained only from the organized medical profession, which is the American Medical Association.

Because of this fact, I believe that the American Medical Association should undertake the task of establishing in some way educational requirements, including a clinical training sufficiently high to eliminate incompetent surgeons.

I give way to no man in my admiration and respect for the splendid work that is being done today by American surgeons. As a whole, no body of men in any line of human effort is more conscientious, better trained for work, more enthusiastic, more productive, more self-sacrificing or controlled by higher ideals. My paper is not a destructive criticism. It is an effort at constructive criticism. The faults which I have endeavored to point out are small, indeed, when compared with the magnificent whole which represents the accomplishment of American surgery. These faults, however, should be eliminated in the interest of the profession, in the interest of the science of medicine, and in the interest of the public.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

Dr. James E. Moore, Minneapolis: The importance of the subject we all recognize. We must admit that it is a delicate one. The moment we say we must decide on what is a required operation and a necessary one, and what is an unnecessary one, the question naturally arises, who is to be the judge? Who is to say such an operation is necessary and such another one is not necessary? Dr. Bevan very aptly suggests that this organization take the matter in hand and establish a standard that shall govern us all. It is up to us as a profession to establish this standard because if we do not, the laity will take it in hand. They already begin to realize that they have been subject to the machinations of dishonest and incompetent men, and they have been the

sufferers thereby. They are likely to legislate, and when they once begin to have laws spread on our books there will be a lot of vicious legislation enacted; we have had a number of vicious laws brought before our various states within the last year. It is up to us to direct legislation. In Minnesota we are attempting in our humble way to solve this problem through education. We have there established a graduate school. In that graduate school we have two branches; one is in Minneapolis on the campus of the university, and the other is in the far-famed Rochester. The regents of the University of Minnesota have set aside a certain amount of money that enables us to have a certain number of teaching Fellows, whom we are endeavoring to educate as specialists in various lines. The Mayo brothers have contributed $1,500,000 to support like fellowships in Rochester, Minn. We go about it in this way: We say to the profession at large that we have these facilities. We select our candidates from all over the world. We have Fellows from all over the world. We select the best. We take each candidate and make a curriculum suited to his particular needs. We have no fixed curriculum. We find out what a man is short in; if it is anatomy, we advise him to take it up; if it is pathology, we direct him to take up pathology. So all along the line; and incidentally he is practicing surgery. Now I have forgotten the exact number we have in surgery in Minneapolis and Rochester, but it is a goodly number, and we hope to answer this question in this way: They agree to stay three years and study to the best of their advantages, and we give all the advantanges there are to be had anywhere, both in Rochester and in Minneapolis. These men are paid a stipend, so that it is not a rich man's graduate school; the poorest boy in the country can go there. He is paid $500 or $600 the first year, on which he can live; $750 the second year, and $1,000 the third year. We get these young men to assist us in the teaching in the hospital and various work in the laboratory.

I think the strongest answer to this problem is an educational one. We do not pride ourselves on being any more honest in Minnesota than elsewhere; we have only the judgment given us; but in education we feel that we are particularly strong.

DR. WILLIAM M. ROBERTSON, Warren, Pa.: You cannot correct errors which are basic by any system of training. As a teacher of singing cannot make a voice, a teacher of surgery cannot make a properly balanced intellect. What we are trying to do is to educate young men beyond their capacity, which will make a *"highbrow"* but not a surgeon. You must select your men. Competent, honest men are born, not made. Institutions of research, like that in Minnesota, can select their men, and they can be studied in their judgment and mode of thought. What Dr. Bevan is after is judgmen and honesty, and he takes for granted that one can make them, which is impossible.

DR. JOHN B. DEAVER, Philadelphia: I endorse the views of Dr. Bevan. No one is more capable of suggesting the course to pursue under these circumstances than Dr. Bevan, who has demonstrated the masterful work he is capable of accomplishing in advancing medical education; therefore, I would make a motion that a committee of ten be appointed to further Dr. Bevan's ideas relative to this vital question.

[For action on this motion, see minutes of the section.]

DR. ARTHUR DEAN BEVAN, Chicago: My idea was to do with this problem just what has been done: To refer this to a committee of say ten men of wide experience and let them analyze the facts as they are and report back to this body and to the Judicial Council. I think it is a real problem, and I think frankly facing this problem is an evidence of the strength of our position, the strength of modern surgery. I really believe that something may be done, something can be done, as has been done with drug therapy, if we handle this in an intelligent way, with the backing of the organized profession of the country.

Reformers.—Utopias are worthless, because they are founded on very limited, and probably erroneous, estimates of the possibilities of human development.—*Scientific American.*

THE AGE AND SEASONAL INCIDENCE AND COMMUNICABILITY OF ACUTE POLIOMYELITIS

AS SHOWN IN THE EPIDEMIC IN NEW YORK CITY IN 1916*

CHARLES HERRMAN, M.D.
Attending Pediatrician, Lebanon Hospital
NEW YORK

The epidemic of acute poliomyelitis which raged in New York City in 1916 was the largest on record. The statistics of the department of health are the most complete and accurate that we have. Previous epidemics were not only much smaller, but were studied by individual physicians or groups of physicians, in most cases after the epidemic had subsided. The records, therefore, were incomplete. By making the disease a reportable one from the beginning of the epidemic, the department succeeded in obtaining valuable data. It is true that a certain percentage of mild nonparalytic cases were not recognized and reported, but

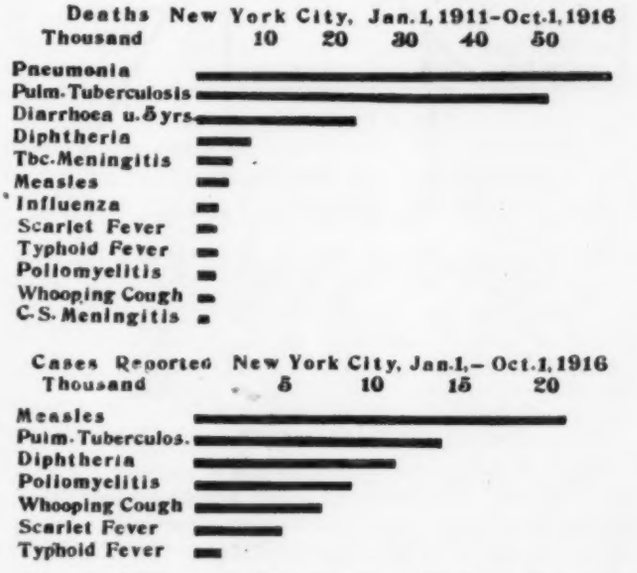


Chart 1.—Deaths, New York City, Jan. 1, 1911-Oct. 1, 1916; cases reported, Jan. 1-Oct. 1, 1916.

this percentage remained fairly constant throughout the epidemic, so that it does not interfere with the accuracy of the age and seasonal incidence of the disease, as based on the cases recognized and reported. Frost has drawn certain conclusions based on the study of three small epidemics. I shall endeavor to show how a study of the figures of the New York epidemic tend to verify some of his conclusions.

FREQUENCY OF THE DISEASE AS COMPARED WITH THE OTHER COMMUNICABLE DISEASES

In Chart 1, I have represented graphically the deaths from these diseases in New York City during the last five years. It will be seen that, as compared with pneumonia and pulmonary tuberculosis, the deaths from poliomyelitis are few; about twenty-six times as many are due to pneumonia and about twenty-two times as many to pulmonary tuberculosis. The number

* Read before the joint meeting of the Section on Diseases of Children, the Section on Nervous and Mental Diseases and the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

of deaths from tuberculous meningitis is important, because this disease also attacks young children almost exclusively (Chart 2), and the mortality is practically 100 per cent. As we know definitely the causative agent and the manner in which the disease is spread, it is to a great extent preventable; yet it has received no special attention. In the lower part of Chart 1, I have represented the number of cases of some of the

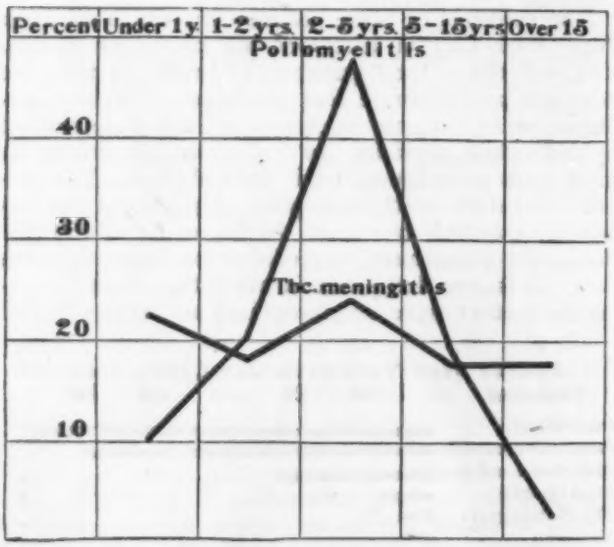


Chart 2.—Mortality from poliomyelitis and tuberculous meningitis.

other communicable diseases reported during the first nine months of 1916. Some of these diseases were less prevalent than usual, and still although the epidemic of poliomyelitis was the largest on record, the number of cases reported was less than that from measles, pulmonary tuberculosis or diphtheria.

AGE INCIDENCE

Chart 3 shows that poliomyelitis is distinctly a disease of early childhood. It seems highly probable that infants as well as young children are especially susceptible, for we have all observed cases in the first few weeks of life. The reason that the disease is comparatively uncommon in early infancy and most common between 2 and 3 years of age probably lies in the difference in the opportunity for coming in contact with the infectious material. Young infants are to a great extent isolated; after 2 years, children are able to run about and mingle freely with others. There is therefore a greater opportunity for infection. The greater susceptibility of young children is also shown by the fact that in cases of which I have notes, in 80 per cent. the patient was the youngest child in the family. This susceptibility of the central nervous system of infants and young children is also shown in the age incidence of tuberculous meningitis, Chart 2.

SEASONAL INCIDENCE

The epidemic in New York City occurred in late summer (Chart 4), as is the case in all temperate climates. In Scandinavia, however, epidemics have extended into the winter months. The high incidence in August and September is especially noteworthy, because at this time all the other communicable diseases are at their lowest point. Although meteorologic conditions may play a part in producing conditions favorable for the spread of poliomyelitis, contact infection is the controlling factor. In Chart 5, the course of the disease is shown in each borough. It will be seen that at one time the disease was on the rise in Manhattan, and Queens, while it was declining in Brooklyn, although of course the meteorologic conditions were the same in the three boroughs.

We have usually explained the increase of the communicable diseases at certain seasons by assuming that the climatic conditions were favorable for the growth of the infectious material. It is also possible, however, that we are more susceptible at certain times. It is well known that the growth of children is not uniform throughout the year. Even the increase in weight and height are not synchronous, but each has

TABLE 1.—MORBIDITY IN THE EPIDEMICS OF 1907 AND 1916 IN NEW YORK CITY *

Borough	Population, 1916	Morbidity per 10,000	Under 5 Years, per 10,000	Percentage Over 9 Years	Morbidity per 10,000 in 1907
Manhattan	2,634,223	9.5	6.43	7.69	1.61
Brooklyn	1,928,422	23.4	15.47	5.15	0.83
Bronx	575,877	10.9	6.78	5.39	....
Queens	366,426	30.6	16.64	7.62	....
Richmond	97,883	29.1	22.30	5.78	....

* Number of cases, 1916, 8,927; deaths, 2,343; death rate, 26.24 per cent.

its season of most marked increase. Cushing and Goetsch ascribe hibernation in certain animals to a seasonal physiologic wave of pluriglandular activity. It may be that a period of pluriglandular inactivity may likewise render the individual more susceptible to infections of a certain type.

In Chart 4 it will be seen that in the epidemic of 1916, as in other epidemics, there was a rapid increase and a rapid decrease in the number of cases; the curve shows a sudden rise and fall. Such a course is found

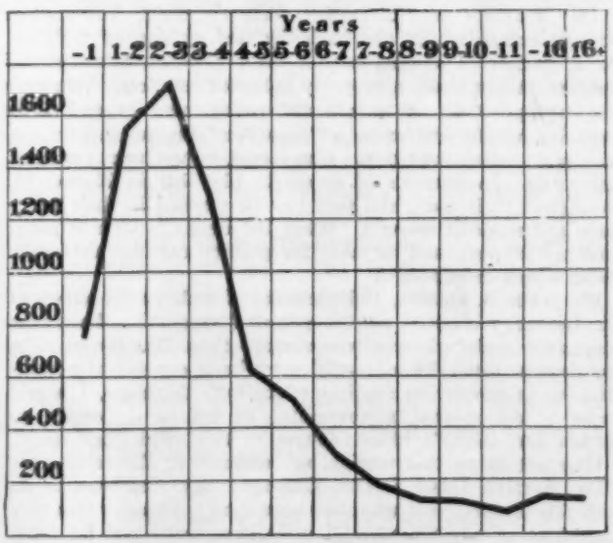


Chart 3.—Age incidence of poliomyelitis, New York City, 1916.

only in a disease which is very communicable, as measles, or in a disease in which carriers are numerous, and spread the disease rapidly. The curves of influenza (infectious epidemic catarrh) and lobar pneumonia show (Chart 6) a similar course, whereas the curve of typhoid, in which carriers are comparatively few, is fairly uniform throughout.

The epidemic furnishes no evidence that any article of food, more especially milk, was responsible. Aside

from the fact that the disease occurred in infants exclusively breast fed, only a contaminated food supply that was suddenly stopped could give such a curve; but it would not show progression from one borough to another. The evidence in favor of insects as an etiologic factor is still less convincing. One of the strongest arguments against this hypothesis is furnished by the age incidence of poliomyelitis (Chart 3). There is no reason why a disease which is spread by insects should attack only infants and young children.

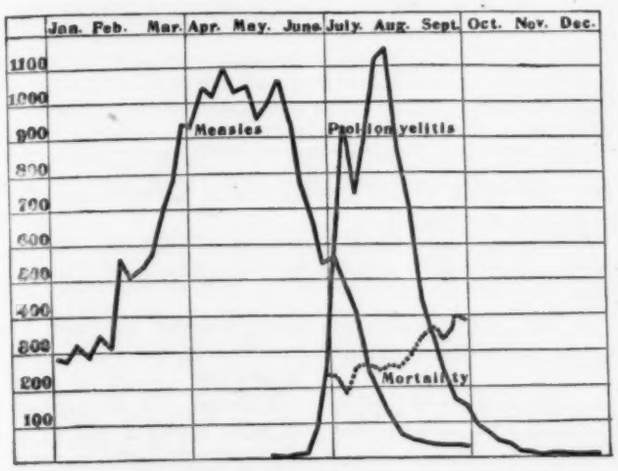


Chart 4.—Seasonal incidence of measles and poliomyelitis.

Yellow fever, typhus and malaria show no such marked predilection.

COMMUNICABILITY

The susceptibility of children to poliomyelitis is much less than to the other communicable diseases. I have investigated the conditions in 204 families which have come under my observation. Of these, 144 were being treated for various forms of paralysis, in the service of Dr. Kleinberg, in the orthopedic department of Lebanon Hospital. The remainder were seen in my hospital service and in private. In these 204 families there were 571 children under 13 years of age, an average of 2.8 children to each family, so that 367

TABLE 2.—PERCENTAGE OF AGE INCIDENCE

Ages	Percentage	
	1916	1907
Under 1 year	10.1	8.5
From 1 to 2 years	20.5	30.2
From 2 to 3 years	22.8	24.7
From 3 to 4 years	17.0	14.5
From 4 to 5 years	8.2	8.6
From 5 to 6 years	6.8	3.8
From 6 to 7 years	4.0	2.5
From 7 to 8 years	2.4	1.5
From 8 to 9 years	1.7	1.5
From 9 to 10 years	1.6	1.0
From 10 to 11 years	1.0	0.9
From 11 to 16 years	1.9	1.7
Over 16 years	1.7	1.0
Under 5 years	78.5	86.4

were directly exposed to infection. Of these, seven, or about 2 per cent., contracted the disease. The reports of the Department of Health of the City of New York, show that 7,000 cases occurred in 6,748 families; that is, there were 252 secondary cases. The total number of children in these families is not stated; but if the figures from my own series of cases are used, 2.8 children to each family, there were 12,146 children exposed, and 252 contracted the disease, making a susceptibility of a little over 2 per cent. From figures compiled from cases which have come under my own observation, I have found that of children under 13 years of age, not protected by a previous attack, 96 per cent. contract measles when exposed; 75 per cent. contract whooping cough (only undoubted cases are included); 25 per cent. contract scarlet fever, and 20 per cent. contract diphtheria.

INDIVIDUAL SUSCEPTIBILITY

There must also be an individual susceptibility. In two instances I observed poliomyelitis in one of twins, the other remaining free (in one instance, two boys of 3 years; in the other, a boy and a girl of 2 years). In both, the two children were equally well developed, previously in good health, constantly together, taking the same food, and with the same environment; the two, therefore, were equally exposed. The only difference noted was that in the younger pair of twins, one year previous when they had an attack of measles, the boy had a moderate attack, the disease running a normal course, while the girl, who later developed poliomyelitis, had several severe convulsions in the course of the disease. This might have indicated or induced an increased vulnerability of the central nervous system.

Zingher[1] states that the Schick test is positive in nearly three times as many cases of poliomyelitis as in normal children, and that susceptibility to one of the less contagious diseases, like poliomyelitis, indicates that the child is more apt to be susceptible to other contagious and infectious diseases. Since in most cases infection takes place through the nasopharyngeal mucous membrane, this hypothesis seems plausible; however, it has not been borne out by an investigation of the 150 families in which there were two or more children, which have come under my own observation. In ten families the child with poliomyelitis had had diphtheria, and one or more of the

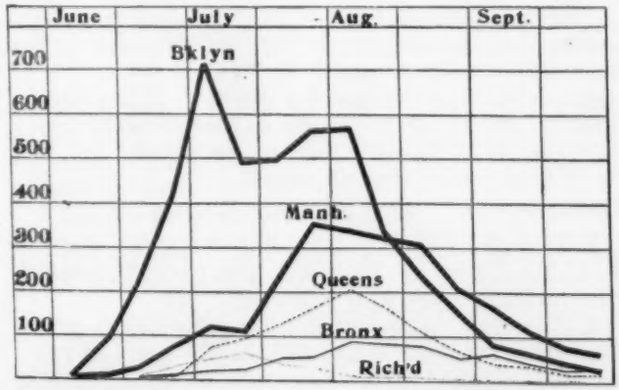


Chart 5.—Course of poliomyelitis in each borough of New York City, 1916.

other children in the family exposed had remained free, while in nine families another child in the family had had diphtheria, the child with poliomyelitis being exposed and remaining free. If the hypothesis should prove to be correct, we should have a simple and valuable means of detecting the susceptible children. I tested the Schick reaction on the two pair of twins already referred to. The boys both gave a positive

1. Zingher, Abraham: The Schick Test in Poliomyelitis, Scarlet Fever, Measles and in Normal Children, Am. Jour. Dis. Child., March, 1917, p. 247.

reaction, the poliomyelitis patient a somewhat more marked reaction. In the other pair, the girl who had had poliomyelitis gave a negative reaction, the boy a positive reaction. It seems highly probable that the infection in poliomyelitis takes place through the nasopharyngeal mucous membrane. Amoss and Taylor have shown that the secretions of these parts in most persons have the power of neutralizing or inactivating the virus of poliomyelitis. It is not unlikely that in some children this power is absent. Dr. Kleinberg, who has had large numbers of poliomyelitis patients under observation for many months has noted that they are particularly susceptible to nasopharyngeal infection.

In communities in which poliomyelitis has already occurred, the number of persons infected is usually less. This is shown in the relative number of cases in the boroughs of Manhattan and Brooklyn in 1907 and in 1916. In 1907 the incidence per 10,000 population was 1.61 in Manhattan, and 0.83 in Brooklyn. In 1916 the proportion in Brooklyn was much larger, 23.5 per 10,000, as against 9.53 in Manhattan. As we should expect, the proportion of patients over 9 years of age, and therefore not immunized by exposure in 1907, was greater in Manhattan in 1916. In the recent epidemic in Manhattan, 7.69 per cent. were over 9 years, and in Brooklyn, 5.15 per cent.

We shall probably not have a great epidemic of poliomyelitis in New York City in several years, because a large percentage of the susceptible children were attacked, or were immunized by exposure. A future epidemic will not be controlled by methods now at our disposal. It could, however, be controlled by a method of detecting the 2 per cent. of susceptible children, and immunizing these against the disease. Reasoning by analogy, the prophylactic use of convalescent serum would be more effective than its therapeutic use, and could be given in smaller quantities.

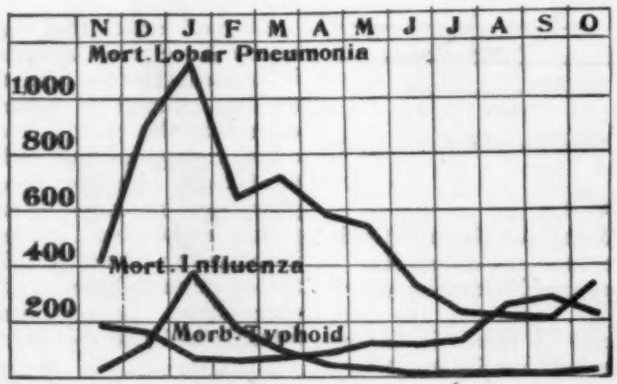


Chart 6.—Curves of lobar pneumonia, influenza and typhoid, New York City, 1916.

SUMMARY AND CONCLUSIONS

1. The epidemic of poliomyelitis which occurred in New York City in 1916 was the largest recorded. Nearly 9,000 cases were reported.

2. The crippling resulting from poliomyelitis is less than from the other communicable diseases and heart disease. A child with a partially paralyzed limb is less handicapped in the struggle for existence and the enjoyment of life than one with defective hearing or a diseased heart.

3. The other communicable diseases of childhood are more common and cause more deaths.

4. Infants and young children are especially susceptible. Young infants are less frequently attacked, because less exposed to infection.

5. A large proportion of patients under 5 years of age does not indicate a mild epidemic.

6. The same increased susceptibility of the central nervous system is seen in the age incidence of tuberculous meningitis.

7. In temperate climates, epidemics occur during the summer months, but sporadic cases occur throughout the year. In Scandinavia, epidemics have extended into the winter months. Meteorologic conditions do not play the most important rôle in the spread of the disease. Seasonal changes in the power of the nasopharyngeal mucous membrane to neutralize or inactivate the virus of poliomyelitis may account for the increased susceptibility.

TABLE 3.—SUSCEPTIBILITY

Number of Families		Number of Children Exposed	Infected	
			Number	Per Cent.
Personal observation	204	358	7	2
Department of health	6,748	12,146	252	2+
Measles	.....	.....	...	98
Whooping cough	.....	.....	...	75
Scarlet fever	.....	.....	...	25
Diphtheria	.....	.....	...	20

8. Patients who have had poliomyelitis seem to be more susceptible to the ordinary nasopharyngeal infections.

9. The susceptibility of children under 13 years of age to poliomyelitis is much less than to the other communicable diseases of childhood. It is present in only about 2 per cent. The susceptibility to measles is about fifty times as great, to whooping cough about thirty-five times, and to scarlet fever and to diphtheria about ten times.

10. Children who are susceptible to poliomyelitis are not necessarily more susceptible to the other communicable diseases.

11. There exists a distinct individual predisposition or susceptibility.

12. We shall probably not have another great epidemic in New York City for several years, because a large percentage of the susceptible children have been attacked or have been immunized by exposure to the disease.

13. A future epidemic could be controlled if we had a method of detecting the 2 per cent. of susceptible children and could immunize these against the disease with convalescent serum.

250 West Eighty-Eighth Street.

Application of Paraffin Film.—Joseph S. Lewis, M.D., Buffalo, writes: May I offer a suggestion to simplify the use of paraffin film for burns. I have found it useful to prepare the dressing as follows: A roller bandage 2 inches in width is sterilized and placed in a tin salve box. Enough paraffin, plain or proprietary, is placed with it, and the whole covered and put in the sterilizer or in boiling water, thereby saturating the bandage, and a little to spare, with the paraffin. For clinical use the tin is placed in boiling water until the paraffin melts. Then so much bandage is drawn out with sterile forceps and cut off with sterile scissors as is needed, whether a single piece or several strips imbricated. The dripping bandage is quickly applied to the surface to be dressed, as it cools rapidly in transit. This may be followed with cotton and the dry bandage.

RESULTS OF THE RECENT EPIDEMIC OF POLIOMYELITIS IN NEW YORK STATE *

HENRY L. K. SHAW, M.D.

Director of the Division of Child Hygiene, New York State Department of Health

ALBANY, N. Y.

The wave of poliomyelitis which swept over the United States last summer helped to clear up some obscure and disputed points in its epidemiology. From the standpoint of preventive medicine, a knowledge of the mode of contact, transmission and communicability is essential in order to control the spread of disease. The material on which this paper is based was obtained from a study of 4,186 cases reported to the New York State Department of Health from June to December, 1916. This does not include the cases occurring in the city of New York.

The age incidence in the state differed somewhat from that in the city, as 55 per cent. of the cases occurred in children under 5 years of age, as compared with 90 per cent. in New York City. Poliomyelitis was almost entirely a disease of childhood in the city of New York, where there were only 1.7 per cent. of the cases among persons over 16 years of age. In the state, exclusive of New York City, 10 per cent of the cases were of persons over 16 years of age. This difference between the age incidence in urban and rural sections of the state seems to be borne out by the experience of other states in the last epidemic. At the Cincinnati meeting of the American Public Health Association, Dr. Frost declared that "studies of statistics of such epidemics as are now available show that in rural epidemics, especially those in Iowa and Minnesota, a much larger proportion of the cases have been in the higher age groups than has been the case in epidemics occurring in large cities."

Dr. Frost suggests an explanation for this difference, when he says, "Certain other infectious diseases, notably measles, are largely limited to children, not because they are essentially children's diseases, but because the adult population has been more or less immunized." It seems not unlikely, therefore, that the limitation of poliomyelitis in urban epidemics almost entirely to children may be due to the fact that adults had developed a certain degree of immunity, through mild and perhaps unrecognized attacks in their early years; while the persons in more sparsely settled areas, who had been less exposed to the contagion of the disease in their childhood, had not acquired the degree of immunity which would render them able, as adults, to resist the infection when present in epidemic form.

The mortality among the 4,186 patients was 866, or 21.1, as compared with the mortality in the city of New York of 27.2. The age incidence in the mortality between the city and the state is similar to that in the morbidity. In New York City, 79 per cent. of the total deaths were of patients under 5 years of age, while in the up-state cities these deaths constituted 59 per cent., and in the rural sections 45 per cent. In the rural sections of the state, 19 per cent., or nearly one out of five deaths, occurred over the age of 16. The popular term "infantile paralysis" is therefore a misnomer.

* Read before the joint meeting of the Section on Diseases of Children, the Section on Nervous and Mental Diseases and the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

The period of incubation as shown by a study of 756 cases to determine the date of paralysis after the first sign of acute symptoms was: 68.7 per cent. within three days; 79 per cent. within four days; 95.7 per cent. within seven days, and 98 per cent. within ten days. This would indicate that the period of incubation is comparatively short. It can therefore be stated with some degree of positiveness that the incubation period is from three to ten days. If a child who has been exposed to a patient with poliomyelitis does not develop symptoms of the disease within two weeks, it can be considered safe.

The most important point to determine and about which no reliable information has been published is the length of time a patient having poliomyelitis may transmit the disease and be a menace to the community. The data studied were obtained from reports sent to the department by physicians and sanitary supervisors. It was necessary to include in this study only those instances in which the date of onset of the primary case was positively established and a definite date when the secondary case was exposed. The number of cases in which these data were returned was necessarily small, as in most instances a strict quarantine was imposed as soon as the case was diagnosed, so that the number of exposures was limited.

PARTIAL PERIOD DURING WHICH PATIENTS WITH POLIOMYELITIS WERE A SOURCE OF INFECTION

Primary		Secondary		Date of Exposure	Onset	Partial Period Poliomyelitis Communicable in Primary Cases
Case No.	Onset	Age	Case No.			
1616	Aug. 1	18 mo.	448	Aug. 4	Aug. 21	3 days
571	Aug. 2	2 yr.	475	Aug. 3	Aug. 14	1 day
P-538	Aug. 23	12 yr.	538	Aug. 22	Aug. 28	1 day
P-538	Aug. 23	12 yr.	539	Aug. 22	Aug. 29	1 day
970	Aug. 5	16 yr.	551	Aug. 11	Aug. 15	6 days
2104	Aug. 30	9 yr.	635	Aug. 30	Sept. 5	1 day
2672	Sept. 1	5 yr.	673	Sept. 3	Sept. 9	2 days
1653	Aug. 6	8 yr.	687	Aug. 10	Aug. 20	4 days
3158	Sept. 18	19 mo.	709	Sept. 19	Sept. 28	1 day
2406	Aug. 26	4 yr.	1016	Aug. 26	Sept. 4	1 day
1005	Aug. 9	6 yr.	1034	Aug. 7	Aug. 17	2 days
1238	Aug. 1	10 yr.	1060	Aug. 8	Aug. 12	7 days
3588	Sept. 18	7 yr.	2055	Sept. 18	Sept. 27	1 day
3034	Sept. 12	7 yr.	3286	Sept. 14	Sept. 19	2 days
2188	Aug. 24	2 yr.	2354	Aug. 24	Aug. 31	1 day
1078	Aug. 11	2 yr.	2414	Aug. 13	Aug. 17	2 days
942	Aug. 11	4 yr.	1612	Aug. 10	Aug. 18	1 day
Robt. E.	Aug. 26	2 yr.	Irene S.	Sept. 3	Sept. 14	8 days

From the table of thirty-six primary and secondary cases, it would seem that the longest period a primary case was actually observed to be infectious was eight days, and in most cases it was one or two days. There were a number of cases reported in which the onset of the disease was reported one or two days after an exposure. Not all of these were included, as it was felt that in many instances they probably received their infection at the same time that infection occurred in the so-called primary case. The conclusion to be drawn from this study is that for the protection of public health a period of quarantine of three weeks would render ample and sufficient protection. This is the period required in the city of Washington and in the state of Wisconsin. A longer period is unnecessary and often a distinct hardship.

That poliomyelitis is transferred by contact is becoming more generally accepted. A committee appointed by the New York City Department of Health, headed by Dr. Simon Flexner, announced a few days ago its conviction that the disease was thus

transmitted. A commission appointed by Surgeon-General Blue of the United States Public Health Service stated that "the infectious agent was transmitted chiefly by contact with patient or carrier, but exact incidence of such contact is often difficult to determine on account of unrecognized forms of the disease." This commission further observed that "this disease was widely prevalent and was most frequently of the nonparalytic type."

No one could fail to become convinced that the infection is transmitted by contact after studying the spot maps made of the cases as they were reported in the state from week to week. The cases followed the lines of communication with such consistency as to be unmistakable. One epidemic which has been carefully studied out by Mr. Chalmers, statistician of the department of health, was proved to have resulted from exposures at a county fair

CONCLUSION

We have learned from this recent pandemic that poliomyelitis is transmitted by contact with a patient or a carrier; that the period of incubation averages seven days, and that three weeks is a sufficient period to hold a patient with poliomyelitis in quarantine.

FATIGUE AND EXERCISE IN THE TREATMENT OF INFANTILE PARALYSIS

A STUDY OF ONE THOUSAND EIGHT HUNDRED AND THIRTY-SIX CASES *

ROBERT W. LOVETT, M.D.
BOSTON

This analysis of 1,836 cases of infantile paralysis consists of a study of the records of the first round of the poliomyelitis clinics of the New York State Department of Health, which began, Oct. 17, 1916, and finished, Jan. 20, 1917.

The paper is an abstract of a preliminary report on the scientific side of the work, presented to the New York State commissioner of health, to whom I am indebted for permission to publish these data. Extensive tabulation has been made of many points in the report to the commissioner, with whom have been deposited all the original records from which these data are drawn. The presentation here of a large number of tables would be simply confusing and defeat the purpose which I have in mind, which is merely to call attention to four salient points which I believe these figures show. The tabulations were made to cover a large number of points, most of which proved to be of no great interest or importance; but certain of the tables told a perfectly definite story, and this paper will be devoted to the study of these points. They are that:

1. A complete examination in every case gives a different picture as to the general and special distribution of the paralysis from the usual one.

2. Muscular weakening is much more frequent than total paralysis.

3. A greater severity of the degree of paralysis in the legs of old as contrasted with new cases suggests that the weight-bearing use of the legs in walking is harmful.

4. The differing functions of the right and left arms may be utilized for the study of the effect of nonweight-bearing exercise.

These cases were studied with great care in the clinics, and in every instance an examination was made by one of the three surgeons in charge, Dr. Armitage Whitman, Dr. John T. Hodgen or myself. In every case this examination included both arms, both legs, back, neck and abdomen. It consisted in obtaining, or attempting to obtain, voluntary contraction of each different muscle or muscle group, with limbs placed under favorable conditions of leverage. The muscles were then graded as:

1. Normal.
2. Good, when the muscle was strong enough to overcome gravity and some resistance, but was not quite of normal strength.
3. Fair, when the muscle was able to overcome gravity, and could perform part of the normal movement.
4. Poor, when slight movement could be accomplished but gravity could not be overcome.
5. Trace, when no movement of the limb could be accomplished, but the muscle could be felt to contract.
6. Totally paralyzed, when attempted voluntary movement was not accompanied by any perceptible contraction of the muscle.

According to this standard, every available muscle or muscle group was classified in every case. Any such classification is subject to a certain amount of personal variation, but this proved on the whole close enough to give a general idea of the character of the muscle. For purposes of simplicity in the paper, the muscle is spoken of as if it were the only structure to be considered; but it is recognized that in this study the muscle is to be considered as the index of the condition of the neuromuscular mechanism. In the 1,836 records taken consecutively from our files for analysis, 513 were of children 3 years of age or less. Such records, although carefully made, are not sufficiently accurate for detailed analysis on account of the age of the children, and were omitted from the study except where especially stated.

TABLE 1.—DURATION OF PARALYSIS AT EXAMINATION (THREE HUNDRED AND FIFTY-THREE OLD CASES)

Duration, Years	Number of Cases	Duration, Years	Number of Cases
From 1 to 2	25	From 12 to 13	7
From 2 to 3	28	From 13 to 14	3
From 3 to 4	38	From 14 to 15	5
From 4 to 5	20	From 15 to 16	2
From 5 to 6	38	From 16 to 17	2
From 6 to 7	62	From 17 to 18	3
From 7 to 8	41	From 18 to 19	0
From 8 to 9	20	From 19 to 20	0
From 9 to 10	32	From 20 to 21	0
From 10 to 11	9	From 21 to 22	2
From 11 to 12	7		

This leaves for detailed analysis 1,323 cases in which the patients were over 3 years old. These form two groups: (1) a group of 948 cases with onset in 1916, and (2) a group of 375 cases with onset in 1915 or earlier. The recent cases were from one to six months' duration when the patients were seen at the clinics, and the group of old cases had lasted from a little over a year to twenty-two years, with an average duration of over six years (Table 1).

The groups of recent cases and old cases were studied separately on all points, and the data of

* Abstract of a preliminary report made to the state commissioner of health of New York.

* Read before the joint meeting of the Section on Diseases of Children, the Section on Nervous and Mental Diseases and the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

the two groups compared. In the recent cases we had patients just emerging from the acute stage with the original phenomena of the disease unmodified. In the group of old cases we had a picture of the disease years after the attack, with modifications induced by

TABLE 2.—AGES OF PATIENTS

Ages, Years	Number of Cases	
	Affected in 1916	Prior to 1916
Under 1	65	..
From 1 to 2	224	..
From 2 to 3	224	2
From 3 to 4	195	15
From 4 to 5	135	21
From 5 to 6	125	14
From 6 to 7	97	23
From 7 to 8	63	36
From 8 to 9	56	37
From 9 to 10	40	26
From 10 to 11	48	46
From 11 to 12	27	28
From 12 to 13	18	21
From 13 to 14	15	17
From 14 to 15	12	18
From 15 to 19	54	40
From 20 to 29	46	25
From 30 to 39	13	4
From 40 to 49	2	2
50 and over	2	..
Total	1,461	375

the conditions under which the patient had lived in the interval. Few had received continued modern treatment, all had been as active in walking as their disability had allowed, and these old cases represented what was liable to happen in the disease when treated by old methods, if treated at all, because patients under treatment by competent orthopedic surgeons were naturally not apt to appear at public state clinics. By contrasting, then, the phenomena of these two groups, it was hoped that something of the natural history of the disease might be learned.

Age.—The age tables show nothing of especial interest. Of 1,461 patients affected in 1916, 513 were under 3 years; 4.5 per cent. were over 20, two patients being over 50.

GENERAL DISTRIBUTION

The tabulation of general distribution from this group of cases examined with great care shows that the distribution is not quite what certain earlier tabu-

TABLE 3.—GENERAL DISTRIBUTION IN THE ORDER OF RELATIVE FREQUENCY

	New Cases	Old Cases
Both legs	338	127
One leg	302	85
Both legs and both arms	127	55
Both legs and one arm	101	43
One arm	83	19
One arm and one leg, same side	38	13
One arm and one leg, opposite sides	29	7
Both arms	33	4
Both arms and one leg	20	8
Girdle cases	57	1
Facial alone	38	1
Total	1,166	363

lations have shown it to be, and that certain locations of the paralysis are extremely common and practically important, as in the abdomen and neck.

In recent cases the most common involvement is of both legs, then one or the other leg, next in frequency all four extremities, then two legs and one arm, and after that one arm. Next in frequency comes a distribution of much importance—one arm and one leg—and here a hemiplegic arrangement is distinctly more common than one arm and one leg on opposite sides in both recent and old groups (Table 3).

The group of old cases shows the same general relative frequency as the recent cases, except in the involvement of all four extremities, two arms and one leg, and both arms, all of which are much less frequent than in recent cases. This shows the tendency of these extensive original paralyses to clear up in the arms. An important and serious type of paralysis which does not affect the extremities is decribed as the girdle type when the affection is chiefly of the back and abdomen.

Both sides of the cord are more frequently affected than one side. Of 705 recent cases, 60.5 per cent. affected both sides of the cord, as shown by the distribution of the paralysis on both sides of the body.

The frequency of paralysis of the abdomen, the back and the neck, as shown by this table, is so important as to require separate consideration.

Abdomen.—In 948 patients over 3 years of age affected in 1916, 72 per cent. were paralyzed in the abdomen, and these unique findings are undoubtedly because examination in every case was made as to this point. In my experience at least, many cases previously have escaped observation because this especial point was not noted unless extreme. The normal child can sit up from the lying position with the arms crossed on the chest without effort when the abdominal muscles are normal and hip flexors are not seriously involved. By placing the fingers on the recti and lateral abdomi-

TABLE 4.—INVOLVEMENT OF ABDOMEN, BACK AND NECK

	1916 Cases (948)			Old Cases (375)		
	Involvements		Ratio of Total to Partial	Involvements		Ratio of Total to Partial
	Number	Per Cent.		Number	Per Cent.	
Abdomen	686	72.3	1: 9.6	168	44.8	1:16.3
Back	128	13.5	1:21.9	55	14.6	1:20.2
Neck	103	10.8	1:49.5	27	7	0 total

nal muscles, one can note the degree of paralysis and whether it is bilateral or unilateral. As contrasted with the 72 per cent. of affection of the abdomen in recent cases, the table of old cases shows 44.8 per cent of affection. This indicates a tendency of this paralysis to diminish in frequency and severity in the natural history of the disease; that is, the prognosis would seem fairly favorable for improvement.

Back.—The examination for paralysis of the back muscles is not as satisfactory or as accurate as most examinations, and slight degrees of weakness are apt to be overlooked. The tables show an involvement of 13.5 per cent. of the back in the patients in the recent group, and 15 per cent. in those of the old cases.

Neck.—Neck paralysis has evidently been largely overlooked, but frequently exists. In the recent cases it was present in 11 per cent., but in only 7 per cent. of the old cases. The normal patient, child or adult can lift the head against quite a little force when lying on the back. Weakness or paralysis of one or both sternomastoid muscles makes this impossible. This was the test adopted. From its relative infrequency in late cases, the prognosis is evidently favorable for improvement.

Scoliosis.—The significance of recognizing abdominal paralysis is shown, for example, in connection with lateral curvature of the spine, with which it is often associated; 179 cases of lateral curvature of the spine were recorded, sixty-nine occurring in recent cases and

110 in old cases. The proportion of scliosis in the two classes of cases is interesting. In the recent cases scoliosis was recorded in 7 per cent., and in the old

TABLE 5.—SCOLIOSIS AND ITS ASSOCIATED PARALYSES

	Old Cases		1916 Cases	
	Number	Abdomen Involved	Number	Abdomen Involved
One leg	30	5	10	7
Two legs	17	15	14	13
One arm	5	1	10	7
Two arms	3	1	5	4
One leg and one arm	3	2	3	2
One leg and two arms	2	..	..	..
Two legs and one arm	6	6	6	6
Four extremities	12	9	14	12
Abdomen and back	5	..	6	..
Short leg	41	6	..	..
No paralysis	4	..	1	..

cases in 30 per cent. Scoliosis is therefore relatively four times as common in old as in recent cases, and is a late complication.

In recent cases, involvement of the abdomen occurred in connection with lateral curvature in 75 per cent. of the cases, but in only 42 per cent. of the old cases. Apparently the most frequent cause of serious scoliosis is unilateral involvement of the abdominal muscles. Any affection of the abdomen in the early stage should make one watchful for scoliosis in the late stage.

Many unusual and previously unrecorded locations of paralysis were noted which will be discussed in a subsequent report.

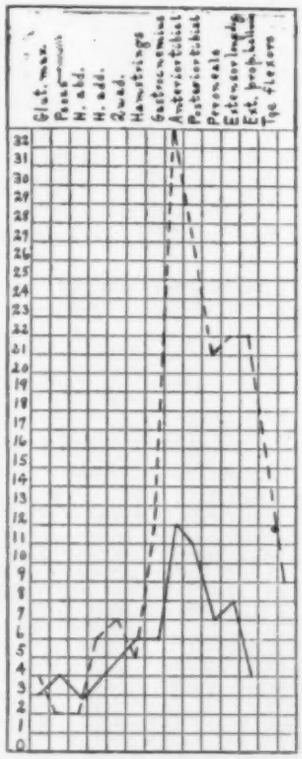


Chart 1.—Percentage of paralysis of each muscle in both recent and old cases in the lower extremity: solid line, recent cases; broken line, old cases.

TOTAL PARALYSIS

The two groups of cases were then analyzed with regard to the number and distribution of total paralyses of individual muscles occurring first, in the new, and second, in the old cases.

In the recent cases, in 948 patients there were 2,352 totally paralyzed muscles, an average of two and a half totally paralyzed muscles per individual. In 375 old cases there were 1,622 totally paralyzed muscles, an average of four and a third totally paralyzed muscles per individual. Total paralysis was therefore relatively more frequent in old than in new cases, a point the importance of which will be commented on later. As to involvement of the different muscles as to total paralysis, the following was the order of frequency in the lower extremity: Paralysis of the anterior tibial leads in both new and old groups. Next in order comes the posterior tibial, then the two extensors, the peronei, gastrocnemius, hamstrings and quadriceps, with a smaller number of total paralysis in the hip. The order of involvement does not differ materially in the group of new and of old cases. It has just been stated that there is a much larger proportion of total paralysis in old than in new cases to the individual, and an investigation was made to see if this occurred in any especial location. Chart 1 shows that the increased prevalence of total paralysis of the lower extremity in old cases occurs below the knee, and that in the thigh and hip muscles the proportion of total paralysis remains the same in new and old cases, but rises greatly in the leg and foot in old cases.

TABLE 6.—TOTAL PARALYSES OF LOWER EXTREMITY IN ORDER OF RELATIVE FREQUENCY

	948 Recent Cases			375 Old Cases		
	Left	Right	Total	Left	Right	Total
Anterior tibial	123	124	247	126	120	246
Posterior tibial	114	119	233	104	102	206
Extensor proprius hallucis	73	79	152	87	73	160
Extensor longus digitorum pedis	78	71	149	86	77	163
Peroneals	75	72	147	78	78	156
Gastrocnemius	60	61	121	47	51	98
Hamstrings	57	59	116	20	22	42
Quadriceps	51	48	99	28	27	55
Hip adductors	47	38	85	19	27	46
Toe flexors	51	32	83	41	29	70
Iliopsoas	41	37	78	7	8	15
Hip abductors	37	32	69	12	8	20
Gluteus maximus	31	36	67	17	12	29
Totals	838	808	1,646	672	634	1,306

With regard to the upper extremity, the analysis of the total paralysis shows nothing of any great importance. The number of observations is relatively small, the muscular relations about the shoulder are very complex, and the study of the upper extremity from this point of view is less satisfactory than that of the lower. The paralysis of the upper extremity is most

TABLE 7.—TOTAL PARALYSES OF UPPER EXTREMITY IN ORDER OF RELATIVE FREQUENCY

	948 Recent Cases			375 Old Cases		
	Left	Right	Total	Left	Right	Total
Anterior deltoid	38	41	79	24	15	39
Posterior deltoid	36	40	76	19	14	33
Opponens pollicis	26	37	63	26	17	43
Outward rotators	19	16	35	8	8	16
Rhomboids	17	17	34	6	3	9
Latissimus dorsi	10	15	25	9	7	16
Biceps	10	10	20	7	2	9
Triceps	11	9	20	10	2	12
Lumbricales	8	11	19	9	6	15
Trapezius	8	10	18	5	5	10
Pectoralis major	6	12	18	13	6	19
Interossei	6	12	18	13	6	19
Thumb extensors	7	7	14	7	1	8
Serratus magnus	6	6	12	1	..	1
Wrist flexors	6	6	12	7	1	8
Thumb flexors	6	6	12	5	4	9
Supinators	4	7	11	8	2	10
Finger extensors	3	8	11	6	..	6
Pronators	4	6	10	8	1	9
Wrist extensors	5	5	10	5	3	8
Finger flexors	4	5	9	4	1	5
Totals	240	286	526	200	104	304

frequent in the deltoid muscle, and next follows the opponens pollicis, with the smallest number of total paralyses in the hand. The proportion of total paralysis is practically the same in old and new cases.

RELATION OF TOTAL TO PARTIAL PARALYSIS IN NEW AND OLD CASES

In the preliminary report[1] to the State Department of Health of Vermont in 1914, it was stated that the relation of total paralysis to partial in a combined group of old and new cases was as 1:2.5. Since the

1. Lovett, R. W.: Treatment of Infantile Paralysis, THE JOURNAL A. M. A., June 26, 1915, p. 2118.

beginning of the Vermont work, the examination for muscular involvement has become more accurate and more delicate and a larger number of weakened muscles are detected, which originally probably would have been passed as normal. This change would of course make the proportion of partial paralysis higher in relation to total than in the original Vermont figures because more muscles are now recognized as involved.

TABLE 8.—MUSCULAR INVOLVEMENT

	Paralysis		Ratio of Total to Partial
	Partial	Total	
Lower extremity:			
Patients of 1916 over 3 years	8,574	1,746	1:4.2
Old cases	3,618	1,277	1:2.8
Upper extremity:			
Patients of 1916 over 3 years	3,628	560	1:6.4
Old cases	1,662	285	1:5.8

This ratio will now be discussed in the New York cases, contrasting as usual the two groups of recent and old cases.

Taking the ratio of total to partial affection in all cases without regard to the location of the paralysis, the ratio was 1:5 in the recent cases, and 1:3 in the old cases. Examining further to see if this ratio differs in different parts of the body, if the lower extremity is considered alone in the new cases it is 1:4.2, and in the old, 1:2.8. In other words, the ratio of total to partial paralysis is very much higher in the lower extremity than elsewhere. Investigating now still further the lower extremity to see in which part of it this difference occurs, we find that in the leg and foot the proportion in new cases is 1:2.4 and in old cases 1:1.5. In the thigh, that is, in the quadriceps and hamstring muscles, in new cases it is 1:5.7, and in old cases 1:7. In the hip in new cases it is 1:7 and in old cases 1:11.4.

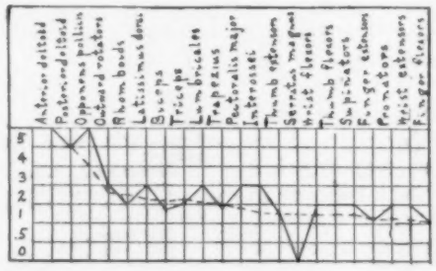


Chart 2.—Percentage of total paralysis of each muscle in both recent and old cases in the upper extremity: solid line, recent cases; broken line, old cases.

In short, in the leg and foot the proportion of total to partial paralysis is very much higher in the old than in the new cases, but lower in the thigh and hip. The hip and thigh muscles become less affected and the foot muscles more affected as the years pass.

The proportion of total to partial paralysis in the foot and leg in old as contrasted with recent cases accentuates the observation already made as to the greatly increased proportion of total paralysis in the muscles of the leg and foot.

This seems a matter of the highest importance, and the reading of it seems clear. It may be assumed that when so large a group of cases is taken for analysis, minor differences between the characteristics of various epidemics will be eliminated and that the general behavior and type of the disease will be on the whole the same, and that therefore one may safely reason from patients paralyzed in 1916 to patients paralyzed in previous years.

This difference between the relative frequency of partial and total paralysis in the two groups may be met by one of two explanations: 1. Partial paralysis may clear up in the course of the years following the attack, leaving a larger proportion of total paralysis in these late cases. That this is not the case is shown by the fact that there is an absolute and relative increase of total paralysis in the late cases as contrasted with the early ones. 2. The partial paralysis changes to total paralysis in the course of years. In this instance, total paralysis would become relatively and actually more common in the old cases, and the proportion of total to partial paralysis would become higher in the old than in the new cases. This is exactly what has happened here.

The question of interest in this connection is, Why should partial change to total paralysis after the first months following the attack? Here again we obtain suggestive data from the figures. The high occurrence of total paralysis in the old cases has been shown earlier in the paper to be almost wholly due to increase in the foot and leg. In the thigh, hip and upper extremity, there is no such increase, and if we looked only at these parts of the body, we should feel that the proportion between total and partial paralysis was about the same in new as in old cases. Where so striking a difference is found as exists in the foot between old and new cases, it suggests very strongly that there is some special reason for this difference, and this reason is quite evident when one considers the function of the foot in the months following the acute attack of infantile paralysis. Of all parts of the body, the foot has the maximum weight to carry; the work thrown on the foot is continuously heavy; in walking about and in standing there is no cessation of activity in these muscles, and if, as I have believed and tried to teach for the last two years, fatigue and overuse are detrimental factors of the highest importance in the convalescent stage of infantile paralysis, it is in the foot muscles that one would look for the deleterious effect of overuse, and such deleterious effect would be the change from partial to total paralysis. In 1915 I[1] called attention to the fact that partially paralyzed muscles might lose power by overuse, and I have felt convinced that many a case of gastrocnemius weakness, for example, was converted into a total loss of the muscle by overuse and overtaxing by walking.

In the entirely unexpected result of the present analysis, made by assistants not familiar with my views on this matter, is to be found a confirmation of the opinion that I have held on the effect of muscular fatigue.

TABLE 9.—COMPARISON OF OLD AND NEW CASES

Location	Old Cases: Ratio of Total to Partial	1916 Cases: Ratio of Total to Partial
Leg and foot	1 : 1.5	1 : 2.4
Thigh	1 : 7	1 : 5.7
Hip	1 :11.4	1 : 7.2
Shoulder and arm	1 : 5.3	1 : 5.6
Hand and forearm	1 : 6.5	1 : 8.0

It may be permissible to call attention once more to just what these figures show: 1. Total paralysis is relatively much more frequent in patients paralyzed prior to 1916 than in patients paralyzed in that year. 2. The proportion of total to partial paralysis in the whole group of new cases is less than in the whole group of old cases. 3. When this matter is analyzed, it is found that it is due almost wholly to conditions in the muscles of the leg and foot in which the proportion

of total to partial paralysis is very much higher in old than in new cases, whereas in the hip and thigh it is relatively less in the old cases than in the new. 4. The interpretation of this that seems best to fit the fact is that in the months following the attack when walking is begun, the activity of weight bearing constitutes such gross overuse of the leg muscles that not only are they kept from improving, but also weakening is converted to total paralysis. This is only to be expected if one

TABLE 10.—AVERAGE AFFECTION OF EACH MUSCLE GROUP, FORTY-NINE CASES, IN PERCENTAGES OF NORMAL STRENGTH

Group	Per Cent.	Group	Per Cent.
Plantar flexion	41.5	Abduction	41.0
Dorsiflexion	32.5	Hip extension	51.2
Inversion	28.2	Hip flexion	54.5
Eversion	36.5	Knee extension	34.5
Adduction	42.5	Knee flexion	37.0

looks at the facts. The lowering of power in the weakened muscles of the leg is considerable, as the following will show: The records of forty-nine cases of leg paralysis were taken consecutively from the files for analysis as to the degree of involvement in the different leg muscles, as shown by the spring balance test. The power remaining in each of the groups of the lower extremity ranged from 28 to 52 per cent., with an average of 41 per cent. (Below the knee the average of all groups was 34.6 per cent., above the knee 41 per cent.)

Whatever may be said in its favor, walking on a muscle which is reduced to 30 or 40 per cent. of its normal power is a very serious tax on that muscle's endurance, and however much one may be a believer in exercise, the use of such muscles for weight bearing and walking is not desirable from what we know of the physiology of muscles. These data taken together bear out a perfectly clear conviction on my part, already definitely expressed, that walking to any extent, with or without braces, in the first year after an attack of infantile paralysis not only tends to delay the improvement of partly paralyzed muscles and is liable

TABLE 11.—NUMBER OF PARALYZED GROUPS OF MUSCLES, PARTIAL AND TOTAL (LEFT AND RIGHT)

	1916 Cases		Old Cases	
	Left	Right	Left	Right
Upper extremity				
Hand and forearm	853	913	505	425
Arm	1,121	1,301	562	455
Total	1,974	2,214	1,067	880
Percentage	47%	53%	55%	45%
Lower extremity				
Hip	1,450	1,346	707	737
Thigh	721	745	390	308
Leg and foot	2,087	2,071	1,343	1,320
Total	4,158	4,162	2,440	2,455
Percentage	50%	50%	50%	50%

to set a limit to their final restoration, but may also change them from the class of partly paralyzed to totally paralyzed muscles.

If weight-bearing exercise is detrimental in the first year after the paralysis, and leads to muscular deterioration, most marked where the weight is greatest, one may well inquire whether these tables give any information as to the effect of nonweight-bearing muscular exercise on the progress of paralysis.

DIFFERENCE BETWEEN RIGHT AND LEFT SIDES

From a study of the upper extremity, one may see the effect of nonweight-bearing exercise, and one may go farther and study the effect of the different activity of the right and left hands on the recovery from the paralysis. The function of the two hands is different, the right being used much more freely and continuously than the left, and for more finely coordinated movements, so that in the contrast of the two the effect of nonweight-bearing exercise may be analyzed. As a control, one may take the lower extremities, the function of which is similar. Analysis of the figures shows that the right and left legs are affected exactly alike in new and old cases. Both as to the actual number of paralyses of all grades, and as to the number of totally paralyzed muscles, the percentage is practically 50 for right and left in both groups. In the upper extremity recent cases show a slightly greater involvement of the right arm in cases in which all grades of paralysis are noted, 54 per cent. being on the right side in new cases. In estimating total paralyses of the upper extremity, there were found 36 per cent. on the right and 64 per cent. on the left, in old cases.

In other words, all grades of paralysis and particularly the total form, are about the same in the right

TABLE 12.—DIFFERENCE BETWEEN LEFT AND RIGHT SIDES

	Lower Extremity		Upper Extremity	
	Left, Per Cent.	Right, Per Cent.	Left, Per Cent.	Right, Per Cent.
All paralyses, total and partial:				
1916 cases	50	50	47	53
Old cases	50	50	55	45
Total paralyses by individual muscle groups:				
1916 cases	51	49	46	54
Old cases	52	48	64	36

and left arms in the beginning, but very much less in the later cases in the right arm, whereas, in the legs, the frequency of both right and left is the same in early and in late cases, from which one may infer that nonweight-bearing exercise is beneficial, as shown by the greater improvement of the right upper extremity.

CONCLUSION

The conclusions presented in this paper have been derived from an impartial study of a large number of figures obtained from carefully studied cases. They seem to show that weight-bearing exercise, such as walking to any extent in the first year after infantile paralysis, is apparently attended with risk and is followed in many instances by a change from partial to total paralysis in the foot muscles, whereas in other parts of the body this deterioration does not occur.

The evidence of these figures is also definitely to the effect that the right hand recovers much more effectively than the left, which may be interpreted as showing that the use of nonweight-bearing exercise is beneficial.

It is gratifying to find clinical experience indorsed by an independent statistical examination, and I should like in closing to go definitely on record to the effect that I believe that the weight-bearing use of the muscles with or without braces, in the first year following infantile paralysis involving one or both legs, is risky and detrimental if practiced to any considerable extent, and that by the use of nonweight-bearing therapeutic

muscular exercises conjoined with little or no walking, in cases affecting the leg, it is possible to secure a class of results with which I, for one, had been previously wholly unfamiliar.

ABSTRACT OF DISCUSSION

DR. HAVEN EMERSON, New York: Until the parents know enough to call a physician and the physicians are in a position to make a reasonably quick diagnosis of the disease, and until they report the cases at once to the authorities, it is unlikely that any methods of protection other than those that the individual physician directs can be employed.

I should like to indicate two matters that, as a department, I believe we have learned from this epidemic. In the first place, there is no evidence that environment plays any part in the development or spread of the disease. We have abandoned the old process of fumigation, which was done in the belief that by making a smell in the room, the persons who had the disease could be kept from spreading it to others. It was necessary to consider whether environment had a bearing on the spread of the disease. Everything, however, pointed to personal communication as the source of the infection, rather than to infection from the premises. There was nothing to point to home environment; nothing to point to the character of the diet, unclean food, unclean air, dirty streets, or anything else of that kind as having a relation to the spread of the disease.

Institutions in New York City are under the supervision of the department of health as to the manner of housekeeping of the institution. There were 28,000 children in these institutions. A quarantine was placed on them on July 1, and visitors were excluded. The children were not allowed to be at large in the community and acquire infection in that way. No children were admitted to any of these institutions without a three weeks' isolation period. The result was that only twelve cases of poliomyelitis developed among the 28 000 children in these institutions during the entire summer and fall. Of these twelve cases, only three developed after July 14. That shows that it is possible by physical separation to accomplish some sort of protection for groups of children. Dr. Herrman's suggestion that we isolate the susceptible, if we know them, would offer a chance of protection to the community.

During the past month there have been three deaths reported as due to poliomyelitis. One of these, at necropsy, proved to be cerebral abscess; another, cerebral tumor; and the other, epidemic cerebrospinal meningitis. The community has learned to expect and demand of physicians spinal puncture as a diagnostic procedure.

It is apparent, from some of the studies made in these children, that those who have normal throats are less susceptible to this disease than are those who have abnormal throats.

We have planned to treat this disease this year and in the future much as we do scarlet fever or measles, or any other communicable disease. It has been agreed by the city and state health officers independently that the period of isolation for this disease should be three weeks. If the children who have been sick and have recovered from the disease still continue, after three weeks' isolation, to have a temperature or discharges from the nose and throat, their isolation period should continue, as in the case of scarlet fever. We make one other exception in regard to isolation, in that people concerned with preparation and handling of food have an opportunity of spreading fresh nose and mouth infection through food more directly than is the case of other industries. Therefore, we expect to limit the freedom of adults engaged in the preparing and serving of foods, if they are members of a household where there is infection. It may be that food does not serve as a carrier; but it makes a poor impression on the community to have a person taking care of a sick child in the back room, and serving food to people in the front. I think it is wiser, in this city, to limit the people who are permitted to deal with the handling and preparation of food to those who are free from any obvious contact with such infective diseases as may be carried by hand and mouth infection. We are prepared as if expecting a return of the disease in epidemic form, but so far this year there is nothing to indicate any undue increase or incidence of poliomyelitis in New York City.

DR. C. L. DANA, New York: This spring it was decided to appoint a joint committee of the Academy of Medicine Public Health Committee and the Neurological Society to make some investigation of the poliomyelitis situation. One of our committee, Dr. Wilson, made a careful study of the relative immunity to the disease in relation to the age of children as compared with other infectious diseases. He showed definitely that the period of greatest susceptibility runs from the second to the fifth year in poliomyelitis, corresponding fairly well with that of the other infectious diseases of childhood, with the exception of whooping cough. The conclusion is that immunity to poliomyelitis is not due to a great prevalence of abortive or unrecognized attacks of the disease, but that it is a natural immunity, just like the immunity to other infections.

We found that the disease is not personally or immediately contagious, except to a small extent. The evidence of this is based on the small number of family cases, on the absence of spread of the disease among unprotected children in hospitals, schools, day nurseries and institutions, and on the small number of instances which can be really interpreted as proving personal contagion. We believe, however, in quarantine; and, in general, commend the methods lately adopted by the city board of health. We also believe in hospitalization of the patients. No epidemic developed in any of the very large number of hospitals and other institutions in New York. A child in a hospital is safe from the disease, even if other cases are brought in. If people cannot send the child to a hospital, we have drawn up a memorandum of precautions that provide for hospitalization in the home. One of the things that seemed most in favor was the frequent puncturing of the spinal canal during the early stage of the attack. We feel sure that the best methods of treatment of the paralyzed are those described as indicated in paralysis from nerve injuries. The use of the Martin spring balance in testing and treating cases is also an addition to the later therapy of the disease.

DR. HERMAN SCHWARZ, New York: I feel very strongly that in this large audience we cannot let pass the statement of the neurologists about the noncontagiousness of the disease. I am not going to quibble about the terms contagious or infectious. I might say, however, that we saw a great many cases last summer in which, in most instances, there was a history of contact with another case. If the neurologists had been doing the field work they would certainly have the impression that, if anything, it might be called "catching." If you had gone into 300 families where there had been one case, and had heard histories of other children having had sore throats, or malaise, you would also be convinced that the incidence of the disease during an epidemic is much greater than the figures show. I should say that there were many thousands more than reported, these cases being too mild to give any definite symptoms whatever.

It was one of the commonest things to find another one or more children in the family having been just slightly ill, either before or after the so-called real case of infantile paralysis was reported. I know many of these cases were poliomyelitis, for lumbar puncture was performed for the most trifling symptoms and increased number of cells found in the fluid.

At present I don't think it is fair to say anything about the degree of contagiousness, but to say that it is not contagious, I believe is going too far.

The cell count in the prognosis of the disease has not been of tremendous help to us.

DR. E. C. ROSENOW, Rochester, Minn.: All of us, after listening to this symposium, must feel how helpless we still are in the control and treatment of poliomyelitis. The serum of patients who have recovered from poliomyelitis obviously cannot be used on a large scale. From the work of Flexner

and Noguchi, Amoss and others, it appears that at least abortive attacks of poliomyelitis are necessary in order that neutralizing and protective substances may be produced in the serum. This, it is claimed, is true in the experimental disease in the monkey both from virus and from cultures of the globoid organisms. Amoss' recent work emphasizes the fact that the globoid organisms have, indeed, little antigenic powers. The hope of obtaining a satisfactory remedial agent along these lines appears to me to be small.

A restudy of the bacteriology of poliomyelitis in the recent epidemic has shown the presence of a peculiar pleomorphic streptococcus in atria of infection in the central nervous system in human poliomyelitis and in the brain and cord of monkeys paralyzed with virus. Intravenous injections of this organism soon after isolation produced flaccid paralysis with lesions in the central nervous system in animals. The apparent relation between the large aerobic form and the small anaerobic form has been discussed in a published report. It occurred to me that injections of the large form might call forth a greater production of antibodies in general, as well as antibodies protective against virus. Accordingly, we have immunized a number of horses with aerobic cultures of the pleomorphic streptococcus, and their serums have been tested from time to time as to antibodies and neutralizing and protective power against virus. One horse was injected chiefly with strains recently isolated from monkey poliomyelitis, and another with strains isolated last summer from human poliomyelitis. The serum from both has developed the power to agglutinate in high dilutions (up to 1 to 1,000,000) the strains from human and monkey poliomyelitis. Neither of these serums agglutinate in high dilutions strains of streptococci from other sources, nor do antipneumococcus and antistreptococcus serums agglutinate the pleomorphic streptococcus. The serum from the horse which had been injected with recently isolated strains from monkeys has apparently developed the power to neutralize virus in the test tube and in the monkey. Three monkeys injected intracerebrally with active virus were protected from poliomyelitic attacks by repeated intraspinal or intravenous injections of this serum, beginning soon after injections of virus. Moreover, ten out of thirteen monkeys recovered from typical poliomyelitic attacks following injections of this serum after the symptoms had begun. Nearly all of the untreated controls, and those injected with normal horse serum, died during the attack.

These observations, while too few from which to draw sweeping conclusions, afford strong evidence that the pleomorphic streptococcus isolated so constantly from the central nervous system bears etiologic relationship to epidemic poliomyelitis, but final conclusions can not be drawn as to the exact rôle it plays until a true virus is established.

Dr. Reginald H. Sayre, New York: The great field in poliomyelitis is, of course, prevention; and I hope that Dr. Rosenow may show us how to prevent these patients from becoming paralyzed. What Dr. Lovett has told you about the danger of overexercise in the first year cannot be too strongly emphasized; and the danger of overwork in the first few weeks and months, and also the danger of not noticing a slight paralysis of the trunk and allowing these patients to sit up in a chair. Being propped up in this way is responsible for many lateral curvatures of incurable form, for which the patients later come for treatment. These children are best lying on their backs, and not being encouraged by the nurse, and often by the physician, to do work that their muscles are incapable of performing.

How long after the acute attack is it wise to attempt to do things for these patients? Before coming to that, I should like to say that the wisdom of judiciously directed work cannot be overemphasized. The same facility that a pianist gets by constant practice, the same reeducation of his telegraph lines from his brain to his finger tips, is the thing which will give us results in those paralyzed cases in which there is some power of regeneration of function still left. When should one tell the parent that it is useless to proceed with this sort of treatment? I do not know; because years afterwards, when the patient had been abandoned and nothing was being done, the child being left to crawl on the floor because treatment had been considered useless, I have seen cases of that sort gain a great deal of power by the intelligent application of exercise—sometimes combined with support, and sometimes not. Some of my neurologic friends have said that support is useless and should not be applied, because it has a bad effect on the child's mind; but I think it has a worse effect on its mind to have it crawling around, not being able to walk. To give it the ability to move around and exercise with its playmates by the intelligent application of apparatus, I consider a much better procedure.

I agree with Dr. Lovett that in the early stages it is better to leave the child unhampered by apparatus. It is only in the later stages that it needs support. The question of what shall be done (the application of apparatus or such operations as arthrodesis or neurotization of muscles) is one for the late stage of the disease, after several years have passed; not in the immediate condition that confronts us in the children of last year's epidemic; and the people who rush in and operate in the early stages will prevent the patients from having the chance of recovery which nature may afford them later on.

Dr. Horace Greeley, Brooklyn: What I wish particularly to call attention to in regard to the etiology of poliomyelitis, are the conclusions of an article of mine in the July number of the *Journal of Laboratory and Clinical Medicine*. In this article it is shown that "globoid bodies," cultivated from poliomyelitis pathologic material, under the conditions mentioned by Noguchi and others, may be also grown in another form, at temperatures paralleling those prevailing during the prevalence of the disease; that is, about 70 F. At this temperature, these globules assume a bacillus form, similar in characteristics to the gram-negative bacillus sometimes spoken of as the bacillus of distemper. (These characteristics may be brought out at body temperature through the use of a special limewater containing a medium described in the article.) I believe that the organisms of poliomyelitis and of distemper are markedly affected by environment, and that they are one single organism, changing somewhat in character in passing from one group of animals to another. My conclusion in the article quoted was that the organism isolated from patients with poliomyelitis is a pleomorphic bacillus, and that the various forms—globoid bodies, cocci and bacilli—are not different organisms, but only manifestations of pleomorphism in the same organism, as affected by environment; and that this organism is the same as that found in the dog, cat, and other domestic animals when suffering from distemper.

The organism, as shown in my article, is saprophytic, and grows well at "summer heat." It grows well in milk at "summer heat" and resists the pasteurization process while contained therein. It forms spores and is a filter passer.

You all recollect that the commission that investigated the Washington, D. C., outbreak of 1910, reported that during the course of the epidemic the temperature varied between 69.7 and 77.6 F. In New York City the temperature during last year's epidemic was evidently an important factor as the following table shows:

Poliomyelitis in New York City in 1916

Month	Mean Temperature, F.	Cases
May	59.3	29
June	64.2	756
July	73.8	3,863
August	73.6	3,306
September	66.0	780
October	57.2	193

All other epidemics have also been associated with "summer heat" temperatures, and the reasons of such associations are, I think, explained by the findings of the article in question.

Dr. William C. Hager, Brooklyn: There are three essential points that the medical profession at large—that is, the general practitioner and the pediatrists—are interested in, and the public also: first, how the disease is transmitted; second, how the diagnosis may be made early; and third, how

the disease may be treated. You have heard this morning that this is not a contagious disease. That is a matter of terms merely. It is surely communicable. Let me cite one or two cases that I saw myself last year.

A child died in Brooklyn, after thirty-four hours' illness, without a diagnosis. An old woman of 52 years took care of the child almost constantly. She came down, one week later, with a disease of which no diagnosis was made; but after two weeks of inability to walk she was transferred to a hospital, where she remained two weeks and the diagnosis of meningitis was made. A spinal puncture was made, but no definite results were obtained from it. After another two weeks she was discharged, able to walk; but when I examined her she had definite weakness of one leg and inability to raise her left arm. When she was discharged from the hospital she went to her son's house in Queens. There had been no cases of poliomyelitis in that neighborhood previous to this time. Six days later a child in that family came down with poliomyelitis and was taken to the hospital. A day or two later, another child, a nephew of her son, but living in another house, who had visited at his uncle's but one day after she arrived, came down with poliomyelitis and went to the hospital. She then went to a house five blocks away to look for rooms, and took the upper floor of the house. While there, she sat on the porch with the four children of the family, and they all drank water and grapejuice together. One week later one of the children in that house came down with the disease. Perhaps she did not have it.

The diagnosis in the typical cases, which constitute the large percentage of these cases, is possible before paralysis occurs. It should be made as surely as that of any other infectious disease in the typical cases, and most of them are typical. It can be made, first, by the fact that we are dealing with an acute infection of some kind; and secondly, by the fact that we get, as the second stage, involvement of the central nervous system definitely. It may be something else, but the symptoms of the typical cases are very suspicious. Then the spinal puncture will determine the diagnosis absolutely, and that can be made, if the cases are seen early, before paralysis has occurred. That is most important, from the public health point of view; but it is also of the utmost importance, if the children are to receive proper care and a proper line of treatment. Let us all combine on early diagnosis.

The third essential point is treatment. I was, and still am, as hopeful as any one that we can find a serum treatment. I think that will come. The theory of immune serum was excellent; but, on the face of it, it is not useful, because the antibodies produced by nature are sufficient to give sure protection to the individual actively immunized; but when you take a small amount of serum and dilute it, the dilution brings it, in most cases, below the stage of very active power. If we can produce active immunity, that may be another possibility.

DR. HENRY KELLER, New York: One thing struck me as very peculiar, namely, that so few of the patients suffering from tuberculosis of joints have been attacked by infantile paralysis. I have seen none. I have also asked Dr. Lovett about it and he could not recall a single case of his own. I have brought up that same question before the Orthopedic Section of the New York Academy of Medicine, and only one of the men could recall a case. I cannot account for it, and am anxious to hear from some one who can.

Dr. Lovett emphasized, and very properly so, that it is essential to keep the patient at rest for a long time, because, by giving the muscles a chance to rest, especially the weight-bearing muscles, the nerves may regenerate. The difficulty, however, is to keep the patient quiet if only few muscles of a group are involved. If the children are paralyzed so extensively that they cannot walk, they will not resist being kept at rest. It is different, however, when only few muscles are involved. I have tried time and again and did not succeed. The parents come back and say that they can not keep the child quiet. Hence, after the quarantine period is over, one is compelled to apply some kind of apparatus, or a plaster-of-Paris bandage, in order to have the child walk properly—for it will walk whether you want it to or not.

One point which has a practical bearing on treatment, especially in paralysis of the leg muscles, is that muscle groups helped by gravity are usually the weaker muscles, while muscles working against gravity are the stronger group. In the muscles of the foot the same rule holds good. The everters are the weaker muscles while the inverters are the stronger group. Now, if the peroneal group is attacked by paralysis, the inverters being very strong, will produce a marked varus deformity in time, unless restrained early in the disease by proper bracing. On the other hand, paralysis of the inverters will not be followed by any marked deformity provided ordinary care is taken to keep the foot within the weight line; that is, building up the shoe one-sixth to one-third inch on the inner border is often sufficient.

Lastly, it is well to bear in mind that a joint is only incapacitated in virtue of the paralysis of the muscles surrounding it, and hence, in the application of a brace, one must see to it that the muscles, as well as the joint, are supported. In quadriceps extensor paralysis, for instance, with a resultant hyperextension of the knee, a short brace reaching to the middle of the thigh does more harm than good, because it cuts the very muscle which it should support. A long brace with a pelvic band to support the muscle from its origin to its insertion is the only efficient brace, and no other.

DR. GEORGE DRAPER, New York: It is impossible for me not to take this opportunity to add my strongest and most emphatic approval to the remarks of Drs. Shaw and Schwarz on the subject of contact distribution of this disease. It was most surprising to hear the report from the committee of the New York Neurological Society and the New York Academy of Medicine that poliomyelitis is not spread by contact. This judgment, apparently, was based on secondary reports. It is impossible to know an epidemic disease unless you see it in its whole course in the field. It is necessary to go where the disease is and see it, feel it, and smell it—for there is a peculiar and distinct smell to these cases in the acute stage. The neurologist who takes the stand that it is not transmitted through contact, and minimizes the value of quarantine, surely cannot have been in the field with the acute cases, and assumes by his position a grave responsibility before the community.

The so-called prodromal stage, as mentioned by Dr. Tilney, is not prodromal, it is the disease itself; and the abortive type, which Wickman described, is analogous to the first or systemic phase of the disease. The paralyses are incidents in the course of an acute general infection.

I cannot help reiterating that poliomyelitis is an acute contagious disease, and a serious menace to the community. The only hold we have on it at present is to treat it as being spread by contact. Unless we try to check immediately the nonparalyzed cases, and healthy contacts who may be carriers of infection from the sick cases, so that secretions and excreta cannot be transferred, we shall again, in some localities, have the trouble that we had last year. This is no time to take the position that it is not a contact disease.

DR. CHARLES HERRMAN, New York: I am a pediatrist, but I think the neurologists may have been misunderstood. The figures are perfectly true: 252 secondary cases occurred in the families that were attacked in New York City. That, in itself, is sufficient to show, beyond all doubt, that the disease is communicable. If I understood correctly, the neurologists make a distinction between contagious and communicable, and think that people are not infected by the patient, but by a person who carries the disease. I do not think they mean that the disease is not communicable, but that the vast majority of cases are caused by carriers.

With regard to the percentage of other children exposed in the families in which a case occurred, I would say that I mentioned that 5 per cent. of the other children in the families exposed had some symptoms. We cannot say definitely that they had a mild attack of poliomyelitis, but they had some symptoms, fever, vomiting, tonsillitis, that might have been due to such an infection. We must assume that a large percentage of these children are practically immune.

With regard to adenoids and tonsils, my investigations show that they were not more common in the children with poliomyelitis than in the others. Twenty-five per cent. of all the children in New York have adenoid vegetations and enlarged tonsils, and in the poliomyelitis cases, the percentage was not perceptibly larger. So I do not think that it is so much a question of their presence as of some lack of normal power to neutralize and inactivate the virus of poliomyelitis in certain individuals. Why, I do not believe anyone knows; but certain individuals lack that power, which is normal in a large percentage.

I believe it should be emphasized that we are not likely to have another large epidemic of the disease within a few years in New York City. The figures show that pretty well. There were seven thousand undoubted cases in children under 5 years, with distinct paralysis. That represents 1 per cent. of the children under 5 years in New York City. If we assume that an equal number who were exposed had a mild attack, were thus immunized, we would have 2 per cent. That is a large percentage of the total number of children under 5 years who are susceptible, and I do not think that it is likely that we shall have another large epidemic here, for some years, at least.

Dr. La Salle Archambault, Albany, N. Y.: I quite understand the attitude that is taken by Dr. Draper. The views that I have expressed concerning the pathogenesis of poliomyelitis are so directly opposed to the doctrine prevailing at present that I can see how difficult it must be to accept them without further evidence. I did not have an opportunity to go into all the facts that I had hoped to present. A point that, in my opinion, cannot be contested, however, is that I have found in the bloodvessels of the Rolandic area, the pons, the medulla, the cervicodorsal cord and the spinal pia, unusual numbers of white cells. There were some polymorphonuclears, but most of the cells were lymphocytes and polyblasts, analogous to the infiltrating cells of the central gray matter. These sections were seen by other men, and I want to add that my preparations are at the disposal of those interested.

There is one point in this connection that I believe has considerable practical bearing. If it is true that the virus of poliomyelitis is carried into the cerebrospinal axis through the bloodstream, we should follow up treatment in the same way. Reading the very careful reports of the serum treatment of poliomyelitis in New York last summer, I cannot say that I was favorably impressed with the reactions obtained. A number of cases did remarkably well, but I do not believe that it was possible to say that the amelioration or recovery was due to the serum in these cases. In a large number of instances the patients were made decidedly worse and must have caused considerable anxiety to the attending physician. It seems to me that if the hematogenous route represents the path by which the cerebrospinal axis is involved, and I believe that it does, we should give the serum intravenously. In that way, much larger quantities can be employed. We must remember that the meninges and their bloodvessels are sufficiently disturbed already, and that the introduction of the serum into the subarachnoidean space acts much as an irritant, simply aggravating the condition and perhaps, in some instances, making the case hopeless. A better result might be obtained by the intravenous route. I would suggest, however, that lumbar puncture be performed before the administration of the serum.

Cold Storage.—Nothing has been found to indicate that cold storage, under proper operation, has any injurious effect on perishable foods. On the contrary, where the best methods of treating respective classes of foods have been determined, as is the case with a large part of the perishables, cold storage has proved its greatest usefulness to mankind. Perishable food placed in cold storage in good condition will, when kept under proper conditions, be perfectly sound and wholesome when removed after long periods of time.—Fifth Report of Committee on Cold Storage, American Public Health Association, *Am. Jour. Pub. Health*, March, 1917.

TREATMENT OF IMPETIGO CONTAGIOSA *

HOWARD MORROW, M.D.
SAN FRANCISCO

After reading the different articles on impetigo in the standard works on dermatology, one cannot help but being impressed with the general belief on the part of the various authors in the specific action of some form of ammoniated mercury. Other parasiticides receive less consideration, and the reader is given to understand that the condition can usually be cured in two or three weeks by the application of the stated therapeutic measure. While it is true that the mild forms of the infection are frequently cured in a short period of time, it must not be forgotten that in its severe manifestations, impetigo may persist for weeks before its eradication is effected. We should also remember that impetigo of the new-born sometimes terminates fatally, no matter how rational and thorough the treatment might have been. So a short summary of the accepted methods of dealing with this by no means harmless disease, and a brief outline of some other procedure not commonly exploited, seem enough to form the subject-matter of a timely paper.

As has usually been recommended, the affected parts are frequently anointed with a dilute ammoniated mercury ointment, and when possible these parts should be bandaged. However, when the eruption is on the face it is next to impossible to keep the involved areas under cloth dressings, and in order to continue one's vocation it is obviously objectionable to apply grease to the lesions during working hours, especially if these occur during the daytime. Unfortunately such drawbacks suffice not only to its partial control, but serve in a very efficient manner to favor the spread of the disease.

Schoolchildren with impetigo often attend their classes and mingle with their fellows at play, without their condition being recognized. It is only natural that they should thus disseminate their infection among their associates. Again adults with impetigo seldom remain away from their work, and many of the male victims continue to be shaved by a barber. It is unnecessary to go into details how, under these unfortunate conditions, a widespread transference of the disease not uncommonly occurs. As a matter of fact, it may be asserted that in a great majority of cases of impetigo among men the infection has been contracted in barber shops. It is therefore no wonder that the laity looks on the disease as "barber's itch," a term which, as is generally conceded by dermatologists, should be restricted to ringworm infection of the beard. It should be mentioned, of course, that there are hygienic school rules governing children, as well as health regulations for the barber shops; but the mild or chronic cases frequently escape detection, and they are just as capable of transmitting the infection as the more acute and severe forms of the disease. For these reasons it is of great importance to make an early diagnosis and to abort the lesions with all possible speed.

For many years aurists have asserted that the best method of treating "pyogenic eczemas" of the ear canal is by the use of some preparation of silver. As many of these "pyogenic eczemas" are in reality strep-

---

* Read before the Section on Dermatology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

tococcic infections, treatment of similar infections on the glabrous and hairy skin by silver preparations should give equally satisfactory results, and this is actually true.

Over a considerable number of years it has been our custom to treat impetigo patients by this method, and it has proved to be a very efficient therapy. By its employment individual lesions in most instances are rapidly aborted, and the general course of the disease appreciably shortened. The method is as follows: The vesicles or pustules are ruptured with gauze, the sodden epithelium which comprised part of the wall is removed, and the base of the lesion is thoroughly covered with a silver solution, the application of the remedy being made with a swab. Where crusts have formed it is usually an indication that the disease is still spreading at the base. The crusts should likewise be removed by rough friction with gauze, and the underlying areas treated with a silver solution applied in the same way as to the vesicular and pustular bases.

I have experimented with different strengths of silver nitrate solution, but now confine myself as a routine practice to a 20 per cent. preparation. When other drugs were added to the silver nitrate solution, in order to avoid staining of the skin, the value of the remedy was lost. And when the colloidal and complex silver salts were employed, the results were just as disappointing.

There are two disadvantages to the silver nitrate method of treating impetigo, one being the temporary pain which follows its application and the other the formation of a black crust which appears quickly and remains for three or four days. These objections, however, should receive little attention, especially when one has learned by actual experience of the reliable efficacy of silver nitrate in the treatment of impetigo, and its almost unfailing qualities as an abortive agent in the control of the disease.

New lesions can usually be prevented by washing with boric acid solution, or with a weak solution of mercuric chlorid. Still, the patient should always be examined carefully and often, in order that new lesions may be recognized in their first stages and promptly aborted.

It is advisable to apply a dusting powder, preferably one containing ammoniated mercury in the strength of from 6 to 10 per cent., and boric acid powder up to from 15 to 20 per cent. When the impetigo is on the uncovered part, even without the silver the powder form of treatment should be selected in preference to a grease. Customarily I have applied such a powder after swabbing with silver solution, and order its use by the patient several times daily. The most satisfying manner of applying the powder is by means of an insufflator. Adults who have the infection on the face should not shave until all active signs of it have disappeared and they should not subject themselves to the irritation of the wind, such as results from motoring in open cars. Needless to say, children suffering from impetigo should be restrained from attending school until they are entirely well, and, furthermore, all prophylactic measures should be enforced to prevent others who occupy the same living quarters from acquiring the disease. New-born infants should be removed as soon and as completely as possible from victims of impetigo, for they seem not alone very susceptible to the infection but are often gravely affected by it. Since that form of impetigo which attacks the new-born differs as a rule widely from the variety of the malady encountered in early youth and in adults, it should receive its own special medical attention. Although small vesicles and small pustules, along with slight crust formation, may be observed in an impetigo eruption of the new-born, the disease usually tends toward the formation of bullae, which appear with great suddenness, and increase in dimension with almost incredible swiftness, occasionally reaching the size of an adult palm in a few days' time. In these cases ammoniated mercury ointment seldom checks the advancing borders, and instead of a cure being achieved, we frequently see the lesions progressing to the formation of enormous flaccid bullae. It is the rule for these bullae to rupture, their thin covering of epidermis sloughing away, leaving large denuded areas resembling superficial burns. The accumulation of sodden epithelium on the diseased skin surface, and of pus, crusts and of greasy detritus, leads to a general pathologic condition which all too often has a fatal ending. If these cases are recognized in the beginning, and the lesions aborted with silver, further dire results of the infection can usually be avoided. It is not infrequently necessary to apply the silver daily to certain portions of the border where the disease has not been stopped in its advance. Clothing produces heat and friction with infants, so it is advisable to keep those who have impetigo in a suitably warm room and with as few garments on as possible. With only a limited amount of material for forming this statement, exposure of these infants to the direct rays of the sun has seemed to be a distinct help in securing a cure. However, it must be emphasized that this form of heliotherapy should not go to the extent of producing an erythema of the unaffected areas of the body.

ABSTRACT OF DISCUSSION

DR. JOHN E. LANE, New Haven, Conn.: Dr. Morrow's paper expresses my own views in regard to the treatment of impetigo. As it is frequently used, on oozing and crusted surfaces of dirty children with impetigo, an ointment is about the worst application that can be made. After the surface has been cleaned and nearly dry, it works well. In cases covered with crusts and ointments, I soften with boric acid solution or petrolatum and then remove the crusts, wipe the surface and apply a solution of silver nitrate. The surface thus becomes nearly dry, and then a powder is applied. In my experience the method is much more rapid and cleanly than that usually employed.

In impetigo of the bearded face I have never had good results with ointments. In such cases I usually use a weak alcoholic solution of iodin, as the stain is less lasting than that from silver nitrate. These cases are a little more stubborn, but they usually yield fairly promptly under such treatment.

DR. W. C. BROWNSON, Asheville, N. C.: I have never used the powder, but I shall try it. It seems to me anything in the shape of a powder would be apt to substitute one crust for another. In my opinion there is little need for treating the ordinary cases of impetigo so actively. I have used a modified form of *l'eau d'Alibour*, the favorite treatment of Saboraud. A modification of his remedy, which does very well, is made up of 1½ grains copper sulphate and 3 grains zinc sulphate to the ounce of camphor water. I often start by removing the crusts by a boric acid-starch poultice, and when removed, sop on the solution named several times a day, and its results are usually prompt. It is cleanly, and I can hardly see how it could be improved on. I think the results are fully as good as when stronger applications are used. In regard to the use of ammoniated mercury, it is advised by Walker and others to use not more than 5 grains

to the ounce. This may be used at night, and in the morning it is washed off with soap and water, and then during the day the lotion I spoke of is used.

Dr. R. A. McDonnell, New Haven, Conn.: My opinion is that ammoniated mercury ointment is a specific if rightly applied. It should be thoroughly rubbed in with a toothbrush, and some of it left on until the time for the next application. This should be done three times a day. I think that there is a distinct advantage in using greasy applications in exudative diseases of the skin, because serum will not mix with grease, and, if the epithelial layers are thoroughly impregnated with salve, then serum has little chance to collect in them. Impetigo is a very superficial disease, and these remarks apply pertinently to this disease. The type of impetigo represented by pemphigus neonatorum is an entirely different proposition. We recently had a little epidemic of this disease in the New Haven Hospital and five patients out of eight died. Nothing seemed to check the advance of the infection.

Dr. Samuel E. Sweitzer, Minneapolis: I have always thought there were certain definite principles for treating impetigo. The crusts and the tops of the little pustules must be removed. One can do that by an ointment of ammoniated mercury, and the next time by wiping the lesions they will come away easily. These patients are mostly children, and to get them off painlessly is an advantage.

I do not believe boric acid is strong enough to stop the transfer of these lesions. I use a 10 per cent. ammoniated mercury ointment. I do not believe they look so bad as when painted black with something like silver. The average case gets well in from five to seven days; in some cases it is a little longer.

If we have a circinate lesion, it is a mistake to suppose that ammoniated mercury will do good. So I cut off the loose part next to the skin and apply the ointment to the whole surface. In the cases in the new-born I have been using a little vaccine and I find it is a big help. There is one case in the University Hospital at present. The baby was born with the skin off the fingers and numerous bulla soon formed. That patient is getting on with staphylococcus vaccine and a little ammoniated mercury.

Dr. Everett S. Lain, Oklahoma: Most dermatologists and practitioners have their own methods of treating impetigo, and all are successful, largely because of nature's immunizing bodies which come to their rescue.

I was glad to hear of Dr. Morrow's method, inasmuch as it differed from most others, and also to hear of his work in testing the silver salts. I believe he reports that the colloidal groups did not give as good results as straight silver nitrate. I have often found the colloidal salts of value in secondary infections of carcinomas. We have all objected to staining and the pain following applications of silver nitrate. My treatment of impetigo, whenever crusts have formed before I see the case, is to apply the usual routine of washing with soap and gauze. I do not resort to the brush as that seemed too severe. Then I apply ammoniated mercury ointment. After the secretions and the scabs are removed, if the patient is deemed able to stand the treatment, I use a 50 per cent. alcoholic solution of salicylic acid. This does not stain unless it is repeated. This has been of special value in preventing spreading.

Dr. Harold N. Cole, Cleveland: As Dr. Heimann suggests, impetigo is due to streptococci, but if we take cultures in pemphigoid of the new-born we will find it staphylococcic in origin. This is often serious if the disease spreads over the body and down to the umbilicus, where it sets up a blood infection.

Ointments seem to me to make the cases worse. I have not used silver nitrate solution, but I will try it. How strong does Dr. Morrow use it in infants? I have been using 1 per cent. iodin in alcohol, and then a dry dusting powder. I always use vaccines, autogenous if possible; otherwise a stock vaccine.

Dr. Walter J. Heimann, New York: Impetigo contagiosa is not obstinate. It is not dependent on the general principles of susceptibility, in the proper significance of the word. There is a local susceptibility in the epidermis, but it is not of a kind that need be controlled by vaccine. In the impetigo of Bockhardt the opposite is the case. An ordinary case of impetigo contagiosa is much easier to cure, particularly if one uses soap and water followed by the application of a lotion. Because of the fact that we are dealing with an acute exudative inflammation of the skin, however, it does not stand grease well. The damming-back process indicated by Dr. McDonnell's discussion I have not found. Consequently I do not use salves in that stage. If it is secondary to pediculosis, I find it best to use a shampoo and get off all the crusts by mechanical and other means and paint with a 20 per cent. silver nitrate solution (I do not use the 50 per cent. solution), and then use mild white precipitate ointment or a 10 per cent. balsam of Peru ointment.

There are two other groups of cases which deserve special consideration. These are the bullous types, in which it is necessary to cause a rupture of the lesions to get antiseptics on the battlefield, so to speak. There are two or three ways of opening a bulla: One is with a sterile toothpick, or gauze, or even with a toothbrush. Then paint the surface of the open bulla with nitrate of silver, and that will produce a cure. When the beard is involved, the disease is likely to become follicular; and then I use soap and water and a solution of resorcin in alcohol. Instruct the patient to moisten the surface several times a day and to put on at night an ammoniated mercury ointment to keep the skin from getting too dry. I find if the patient is not instructed to shave, and he lets the hair grow, the crust mats with the hair, so I tell the patients to shave once a day after softening down the crusts.

Dr. Howard Morrow, San Francisco: I had not mentioned the treatment by boric-starch poultice. That is of value occasionally, especially where we have thick crusted lesions.

Some one suggested that it would not be advisable to treat with a powder impetigo which was weeping. Sometimes there is a slight amount of weeping after the silver is applied, but it is only a few minutes before it is stopped, and then it is advisable to use the powder. I think it was Dr. Sweitzer who objected to lotions. I also dislike lotions, but after the powder is used through the insufflator a few times, it cakes on the skin, and I use a boric acid compress or solution to wash the powder off the parts.

In answer to Dr. Heimann, I have yet to see a bullous impetigo, either of the adult or of the new-born, in which the bullae could not easily be ruptured by gauze.

In answer to Dr. Cole, I use 20 per cent. solution of silver nitrate with infants as on adults.

Clinical Examination of Painters.—The December, 1916, *Bulletin* of the New York City Department of Health publishes the results of an examination of 289 painters undertaken in the occupational disease clinic. In this series there were forty-seven patients, in all of whom both the clinical evidence and the laboratory findings gave positive evidence of lead poisoning. Fifty patients gave marked physical signs of plumbism without laboratory confirmation; twenty-four patients who were apparently free from symptoms were reported from the laboratory as showing either lead in the urine, or stippling of red cells. There were twenty-two patients in whom the symptoms alone or in combination with the laboratory findings created doubt as to the existence of lead poisoning. One hundred and forty-six cases were negative as to lead poisoning. The heaviest incidence of plumbism was found in those who had been in the trade ten years or more. A comparatively small number survive as members of the trade after reaching the age of 50. In this series there were eighty-nine abstainers from alcoholic beverages, a surprisingly large number considering the conditions under which painters work, it being often difficult to obtain drinking water. A study of the symptoms of lead poisoning was made, which shows that in only ten cases was the lead line observed. The hemoglobin estimation and blood pressure findings were of little significance. Lead poisoning appeared to have no influence on the Wassermann test.

AN ANALYSIS OF FORTY-THREE CASES OF SKIN CANCER*

SAMUEL E. SWEITZER, M.D.
Associate Professor and Head of Division of Dermatology and Syphilis, University of Minnesota Medical School
MINNEAPOLIS

Much has been said and written on the subject of skin cancer. Hazen,[1] in a recent book, has given an ample presentation of the subject. My reason for presenting this analysis of forty-three cases is that I have found that a lamentable lack of knowledge of the dangers of skin cancer still exists as regards both the general public and the average physician.

I have had patients tell me that their family physician told them to leave these lesions alone and, in other instances, I have seen cancer near the eye burned off with caustics and recurrences take place and destroy the eye and endanger life itself.

At the present time, both the medical journals and the newspapers have done good work in the dissemination of knowledge on this subject. It is only by endless repetition, however, that any medical facts are generally made known to the public, and so the endeavor must go on, even at the risk of being tiresome to some of us who have ample information on the subject.

The problem of prevention of skin cancer is, to my mind, more important than the treatment of the disease after it starts, and I will endeavor to show from the analysis of these few cases that a great many could have been easily prevented. This is something that needs to be emphasized in the medical schools, as I have found patients often very anxious to have skin blemishes removed from fear of cancer, and I have often found that they came of their own volition as their physician had told them that the lesion was of no consequence.

Progress has been made, however, and the outlook for the future is brighter and we all can help by insisting on the eradication of any lesion that we know from our experience to be a precancerous condition.

In an analysis of these forty-three cases, we find that there were twenty-eight males and fifteen females. This is nearly twice as many in the male as in the female. The ages varied from 27 to 86 years; there were two cases under 30, seven cases under 35, eleven under 50, and thirty-two cases above 50 years. The duration of the disease varied all the way from eight weeks to twenty-five years.

They were all located on the face, neck or ear. The extremities were not involved in this series. Most of the cases were around the nose or on the cheeks, the lower eyelid was involved twice, the temple twice, the lower lip four times. Of the lower lip cases, two were due to smoking, one to a cold-sore and one to seborrheic keratosis. We all know the malignancy of cancer of the lower lip, but I have found that cases involving the inner canthus of the eye are very hard to cure, and if they involve the orbit, the difficulties of treatment are greatly increased.

ETIOLOGY

From the frequency of the occurrence of skin cancer on the exposed surfaces of the body, one is led to believe that the rays of the sun may have something to do with its production, or it may be only on account of the better opportunity for irritation to occur.

Fourteen of these forty-three cases were due to seborrheic keratoses. This is about 30 per cent. and is the most frequent cause in this series.

Acute injury, such as a razor cut, or a scratch, or being hit with a stick, was responsible for seven cases, and three cases were directly due to pinching out a blackhead with the fingers. This gives ten cases due to one acute injury and is about 25 per cent. of the total. Most writers mention trauma as a cause, the occurrence of repeated slight injuries, but do not emphasize the single injury. I was greatly surprised to find this large percentage on analyzing these cases.

Other causes were warts in three cases, pimples five cases, smoking two cases, both on the lower lip, cold-sore two cases, scaly spot three cases, irritation of nose-glasses one case, irritation of alkali dust one case on lower eyelid, angioma one case, red spot one case. Every one of these cases then was due to either one acute injury or to a precancerous dermatosis or to chronic irritation.

I am certain that in many cases we must have the added factor of chronic irritation. Chronic irritation alone can also cause skin cancer. This has long been known and is shown in this series by the two cases involving the lower lip due to smoking, and by the eyelid involvement due to chronic irritation of alkali dust and rubbing.

The high percentage of cases due to an acute injury would lead one to suspect either an infectious origin or a displacement of cells at the time of injury.

In patients with seborrheic keratoses, I think that the formation of skin cancer is possibly aided by the irritation of sunlight, scratching the lesions and picking off the crusts. This might explain the cause of the occurrence of skin cancer in these patients only on the exposed surfaces. We often see seborrheic keratoses on the body, but I never have seen a skin cancer on the body caused by it. However, on examining a very small beginning epithelioma due to this cause, I often have been led to believe that the pressure of the heaped-up scales gradually caused enough chronic irritation in the underlying cells to make them undergo cancerous degeneration and form a little ulcer with the characteristic hard edges.

There were seven patients with multiple lesions, and of these six were due to seborrheic keratoses and the other was due to a scaly spot.

The treatment given in these cases was radium. Thirty-four patients are cured to date; four are still under observation and should result in cures; two were benefited but are not well yet; two had recurrences and one patient was directly stimulated. Of the two that recurred, one involved the neck and was previously treated with the Roentgen ray but not entirely healed. This patient has done well under radium, but is not completely cured and, at present, I am trying desiccation on him.

The second patient also had received Roentgen treatment, in this instance extending over a period of nearly three years. After one course of radium treatment the patient disappeared for six months, and the disease, which previously was on the bridge of the nose, had spread so that it involved the frontal sinus. This patient had in previous years been operated on twice and the lesion had recurred both times.

The case that was directly stimulated involved the malar bone and the amount of radium used was too

* Read before the Section on Dermatology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Hazen, H. H.: Skin Cancer, St. Louis, C. V. Mosby, 1916.

small to be effective. It was necessary to resort to surgery and do a wide operation, and Roentgen rays were used afterward. This patient writes me that he is now apparently well. This was a prickle cell tumor.

CONCLUSIONS

The most important part of the cancer problem is prevention. From this analysis, all but the ten cases due to an acute injury could have been prevented, as thirty-three were due to a precancerous dermatosis or to a chronic irritation. Too much emphasis cannot, therefore, be laid on the early removal of all lesions on the face and hands, especially such as seborrheic keratoses, warts, moles, pimples, angiomas, etc. I assume that the term "pimple," as given by the patients, must have meant some small fibrous tumor. This

SYNOPSIS OF FORTY-THREE CASES OF SKIN CANCER

Case	Sex*	Age	Location	Duration	Etiology	Treatment	Results	Recurrences
1	♂	81	Neck under chin	10-12 yrs.	Started as pimple; was cut and irritated....	Radium	Good	Yes
2	♀	53	Side of nose	12 yrs.	Seborrheic keratosis	Radium	Cured	No
3	♂	62	Side of nose	4 yrs.	Seborrheic keratosis and had been twice cauterized with silver nitrate stick	Radium	Cured	No
4	♀	69	Upper lip	15 mos.	Started like a cold-sore and did not heal....	Radium	Cured	No
5	♂	77	Ala of nose and 1 cheek	1 yr.	Pimple came on nose after auto accident. Lesion did not heal but grew rapidly and destroyed ala of nose	Radium	Cured	No
6	♀	78	Large area on 1 cheek	18 yrs.	Seborrheic keratosis	Radium	Cured	No
7	♂	41	Right cheek	18 mos.	Razor cut. Did not heal.....	Radium	Cured	No
8	♂	85	Left malar eminence	Several years	Seborrheic keratosis	Radium	Cured	No
9	♀	84	Bridge of nose	25 yrs.	Began as pimple. Operated on twice and recurred. Roentgen-rayed off and on for three years	Radium	Poor	Yes
10	♂	59	Side of nose	1 yr.	Seborrheic keratosis	Radium	Cured	No
11	♂	65	Side of nose	2½ yrs.	Began from squeezing a blackhead.....	Radium	Cured	No
12	♂	67	Lower right eyelid	4 yrs.	Alkali dust irritated eyes and produced conjunctivitis. Rubbed and irritated lid; finally began to ulcerate	Radium	Cured	No
13	♂	71	Left cheek	Several years	Seborrheic keratosis	Radium	Cured	No
14	♀	53	Left cheek	2 yrs.	Seborrheic keratosis	Radium	Cured	No
15	♂	30	Lower lip	2 yrs.	Smoked pipe. Had a white spot which later turned into a sore and did not heal	Radium	Cured	No
16	♂	57	Left cheek	18 mos.	Began as red spot like dilated blood vessel. Was treated with electric needle, after which it started to grow and formed an ulcer	Radium	Cured	No
17	♂	75	Left malar area	2 yrs.	Seborrheic keratosis	Radium	Stimulated lesion	
18	♂	35	Median line of nose	15 yrs.	Started from injury. Sore resulted and was irritated by patient. Has been frozen with CO_2, curetted and Roentgen-rayed. Biopsy. Prickle celled	Radium	Good	Not absolutely well yet
19	♀	32	Right temple	8 yrs.	Started as red spot; then grew and ulcer formed. Was cut out and skin grafted. Recurred. Roentgen-rayed for a long time	Radium	Good	Not absolutely well yet
20	♀	50	Nose	20 yrs.	Began as red scaly spot; after five years began to ulcerate	Radium	Cured	No
21	♂	58	Nose	5 yrs.	Began as red pimple; later ulcerated. Was burned off a couple of times. Nose glasses irritated it	Radium	Cured	No
22	♂	66	Left side of cheek	1 yr.	Seborrheic keratosis	Radium	Cured	No
23	♂	47	On cheek in front of r. ear	3 mos.	Cut while shaving. Did not heal and ulcer formed	Radium	Cured	No
24	♀	66	End of nose	4 yrs.	Began with a scratch.....	Radium	Cured	No
25	♀	35	Left naso-labial fold	3 yrs.	Began with a scratch.....	Radium	Cured	No
26	♂	56	Upper part of left eyelid	10 yrs.	Started from slight injury. Skin cracked and ulcer formed	Radium	Cured	No
27	♂	66	Lower lip	8 wks.	Smoked pipe. Had a hyperkeratosis and leukoplakia. Ulcer formed	Radium	Cured	No
28	♀	56	Nose near left ear	2 yrs.	Irritation of nose glasses caused sore which failed to heal	Radium	Cured	No
29	♀	55	Right lower eyelid and r. cheek	10 yrs.	Started from injury. Stick hit patient and ulcer formed	Radium	Cured	No
30	♂	41	Right cheek near eye	2 yrs.	Started from small pimple.....	Radium	Cured	No
31	♂	45	Right side of nose	3½ yrs.	Started from wart. Burnt off twice.....	Radium	Cured	No
32	♂	32	Left side of nose	2 yrs.	Started from smooth wart or fibroma. Burnt with silver nitrate twice and recurred	Radium	Cured	No
33	♂	29	Lower lip	1½ yrs.	Started from cold-sore. Ulcer did not heal..	Radium	Cured	No
34	♂	63	Right temple	5 yrs.	Started as small ulcer. May have been seborrheic keratosis	Radium	Cured	No
35	♀	74	Left cheek near nose	3 yrs.	Started from squeezing a blackhead. A small tumor formed which grew slowly	Radium	Cured	No
36	♂	57	Left side of nose and front of left ear	6 yrs.	Seborrheic keratosis	Radium	Under treatment	
37	♂	74	Near canthus of right eye	10 mos.	Started from scaly spot: probably seborrheic keratosis	Radium	Under treatment	
38	♀	53	Right cheek and right lower eyelid	20 yrs.	Started from scratching a scaly spot which itched. Small ulcer formed which gradually spread, growing rapidly last few mos.	Radium	Cured	No
39	♂	86	Left naso-labial fold	6 yrs.	Seborrheic keratosis	Radium	Cured	No
40	♂	58	Upper part right eyelid	10 yrs.	Started from a wart.....	Radium	Cured	No
41	♂	57	Lower side of nose	10-15 yrs.	Started with squeezing a blackhead; grew slowly; was burned off with silver several times	Radium	Cured	No
42	♀	66	Left side of end of nose	4 yrs.	Began as scaly spot. Patient has seborrheic keratosis	Radium	Under treatment	
43	♀	72	Right cheek near nose	12 yrs.	Began as scaly spot. Patient has seborrheic keratosis	Radium	Under treatment	

* In this column, ♂ denotes male, and ♀ female.
In Cases 1, 13, 17, 20, 22, 36 and 39, more than one lesion were present.

removal is particularly important for people over 50 years of age, as that is when the majority of these cases begin.

The cases due to injury could not have been prevented, and present a puzzling problem. Skin cancer should be suspected in any ulcer of the face or extremities which does not heal readily under ordinary treatment. If skin cancer exists, it should be treated most energetically either by excision, intensive Roentgen ray or radium. Treatment should be instituted early while the lesions are small and before extensive destruction has resulted.

ABSTRACT OF DISCUSSION

DR. FRED WISE, New York: In the concluding remarks of his paper, Dr. Sweitzer laid especial stress on the question of prophylaxis in cutaneous cancer. This is a point which is invariably emphasized by all who are interested in the subject, and the physician is ever cautioned to regard with suspicion any stubborn growth of the integument, especially in adults and elderly people. Cautioning physicians is very good as far as it goes, but I think that very little is done in the way of educating the lay public. The magazine sections of the Sunday papers, instead of dealing with some of the popular minor ailments, such as freckles, superfluous hair, etc., would do well to devote some space to teaching the lay public the danger of neglecting persistent pigmented and warty growths of the skin, which show signs of degeneration or proliferation. In the larger cities, the children of high school age should be taught all about the subject of skin cancer. Children between 16 and 20 years are at an age when these lessons would be deeply impressed on their minds, and information of this character would eventually prove to be an exceedingly valuable aid in the prophylaxis of cancer.

DR. EVERETT S. LAIN, Oklahoma City: Dr. Sweitzer has given a good classification; and as he said, he has repeated that oft-given warning relative to early treatment of skin cancer, and of precancerous conditions. I do not think, however, that this can be emphasized too much; nor does any one realize the effect of removal of early lesions more than do dermatologists.

I was interested in the classification, and while there were but forty-one cases, yet that gives a fair degree of knowledge of the usual run of skin cancers.

Dr. Sweitzer's experience corresponds closely with my own in the summary which I made in 1915 of about 250 cases, which perhaps some of you may remember having read in reprints, or in our *Oklahoma State Medical Journal*. This summary of the forty-one cases corresponds with the larger number I gave in 1915, except that I never found epithelioma of the inner canthus of the eye any more stubborn than when located externally. The inner canthus condition is doubtless caused by our attempts to remove dust and other foreign particles from the eye. I find that in this location the lesion yields to the Roentgen ray and radium equally with those located externally.

As regards the age of the patient, we formerly thought it was almost impossible for anyone under 40 years of age to have the epithelial type of cancer. I have a record of three patients under 30, one 22, and another 23, and all typical cases of epithelioma, one near the lower eyelid on one side, and the other on the lower lip. They have yielded to treatment.

One thing most of us have observed (which is rather contradictory to the usual course of other diseases) is that after 65 or 70, all epithelial cancers, in my experience, yield more readily than the same types in persons of middle age.

As regards race, we expect in the Irish, who have fair, red, tender skins, epithelioma to be more common than in others. That is also true of fair Germans; a large percentage of my cases have been of the Irish or fair German type. The reverse is also true; dark-skinned people, as pointed out by Hazen in the negro, and the full-blooded Indians, to whom I called attention in my paper in 1913 before this section, are not subject to skin cancers. I have yet to see my first case in an Indian. I have seen but few cancers in the negro.

Dr. Wise thought it would be a good thing to have lectures in the public schools in regard to prevention of skin lesions. This progress, I am pleased to say, has been made in the high school of Oklahoma City. For two years we have had medical lectures before the domestic science part of the graduating class. Instruction is given on the prevention of skin lesions and the nursing and care which may be given by ordinary measures.

DR. WALTER J. HEIMANN, New York: What evidence is there that cancer may be caused by acute conditions known to us by the name of "cold sores"?

DR. CHARLES J. SHEPARD, Columbus, Ohio: Dr. Sweitzer mentioned epithelioma following smoking. I wish to report a case I saw on the lip of a carpenter, which apparently followed the holding in his mouth of a lead pencil which he used in his work. It was probably covered with dirt, and doing that day in and day out, had apparently produced that result.

DR. J. C. BATESON, Scranton, Pa.: The essayist has brought out his ideas in a very simple way. I should like to call attention to the cause, as being attributed to traumatism, or some condition such as a wart or mole. I do not believe that these are primary causes, but furnish suitable locations for development.

It is evident that some steps should be taken to inform the public that all malformations should be looked after carefully by the physician to prevent the development of skin cancer. Not all warts or moles produce cancers, but if they are causing any disturbance I think it advisable to remove them at once. We also know that the public fears the knife and think that warts should be left alone.

Now, as to the quack who uses pastes and local escharotics. I know many of their patients, even after the use of the knife, have been cured; and I, too, have treated like cases with simple escharotics, such as acetic acid, zinc chlorid or some combination, and have brought about beautiful results. If we know how to use escharotics with tact and skill, we need not relegate them to the quack.

DR. FREDERICK HARRIS, Chicago: The best way to destroy cancer that I know of is by means of a red hot soldering iron. This will do away with the cancer; so will arsenic, zinc chlorid and trichloracetic acid; but as dermatologists we have better methods than these of treating cancer of the skin.

DR. HAROLD N. COLE, Cleveland: I concur in the suggestions, but I think the Association should be very careful about recommending anything of that sort.

DR. JOHN E. LANE, New Haven, Conn.: The treatments recommended by the speaker, excision, Roentgen ray and radium, are all that are to be recommended in the treatment of cancer, and for ordinary use excision should have the preference. In selected cases in proper hands, radium and the Roentgen ray are most valuable, but as used by a great many operators—I agree with a well known dermatologist that "there are more crimes committed in the name of the Roentgen ray than ever were committed in the name of liberty." One of the most frequent reasons given for using the Roentgen ray for the removal of a cancer is that the cancer is small. To my mind that is no indication for not using the knife. At the age at which most skin cancers appear, a small one can be cut out, leaving a scar that in a few weeks can hardly be distinguished from a wrinkle. It is done more quickly, more surely and with less expense to the patient than in any other way, and if properly done the cosmetic results are as good. In some locations the Roentgen ray or radium is the method of choice. As far as escharotics, acids and other methods of that sort are concerned, I believe that the time has long since gone by to mention them even for condemnation. Certainly it is past my comprehension how any physician can mention them for any other reason than total condemnation. They have no place at all in medicine of the present day.

DR. LOUIS B. MOUNT, Albany, N. Y.: One case I recall, that of a prickle-cell epithelioma of the lower lip in a man 26 years old. Six years previously, that is, at the age of 20,

he was in a fight and was struck on the lower lip. From that time on he had a small bluish discoloration there, which was exactly the spot on which the epithelioma developed. I disagree with the last speaker's statement that the cosmetic results of surgery are better than those obtained with radium or the Roentgen ray.

DR. JAMES M. KING, Nashville, Tenn.: I had one patient who began to develop an epithelioma in the right ear at the age of 16, confirmed with the microscope. When I saw the patient he was 19 years of age, and the growth covered nearly the entire ear. Later he developed a lesion of the nose and one on the chin; that was at the age of 21 or 22.

In reference to the point of cancer resulting from a traumatism, I had one case resulting from a wasp's sting in a mole. When I saw the patient the lesion was about the size of a quarter. It was evidently a cancer. I treated the patient with the Roentgen ray and it gave as good a result as I could wish. Another case was in a patient who cut his lip while eating an apple; death followed from cancer starting in the wound after two or three years' treatment.

In reference to treatment of cancer, I think the main point to keep in mind is the pathology of the case and the size of the lesion. In the case of a small lesion I would treat with the Roentgen ray. I would be sure of getting a better cosmetic result with that, and as permanent a result as by any other means. If it were a larger growth, I would use my judgment as to whether excision and Roentgen ray or Roentgen ray alone was better treatment. I do not advocate pastes. Excision with the electrocautery is a means which I prefer above all others, followed by the Roentgen ray in massive doses.

DR. FRANKLIN W. CREGOR, Indianapolis: It seems to me that when we find an explanation for disturbed metabolism, which the colloidal chemists are studying, we will know more about how best to attack cancer. We know some cancers metastasize while others do not.

As to treatment of cancer, the means that will remove all of the pathologic tissues most completely with the least amount of trauma and with the best cosmetic effects is the treatment to be employed. I have had some splendid results from surgery and some good results from pastes, and have had some splendid results from the Roentgen ray; and I am going to continue using all of them.

DR. HENRY H. HAZEN, Washington, D. C.: I want to touch a few high spots concerning cancer. First, we must differentiate between prickle-cell and basal-cell cancer. Prickle-cell cancer usually invades the neighboring lymph nodes, and the problem is the same as in cancer of the breast. Now, if one gets a patient early, before a clinical diagnosis is possible, and uses the Roentgen ray or caustic, one cannot tell whether one is dealing with prickle-cell or basal-cell cancer. It is always necessary to know, for that gives the clew to treatment. Diagnosis in the case of prickle-cell cancer must be made early. In dealing with cancer of the lip, if the glands are definitely involved at the time of operation we know that the patient does not have the chance for life that he has before they are clinically involved. The glands should be cleaned out before they show any change.

As to treatment, let me give a few statistics: Last winter I studied about 150 of Dr. Bloodgood's cases of basal-cell cancer. Of the cases which could be traced up for the requisite number of years, 86 or 87 per cent. of patients who could be operated on, were definitely cured. Dr. McKee, in an excellent paper read in Cincinnati last month, found that the Roentgen ray cured nearly the same percentage of cases in a series of about the same size; so we have some justification for the claim that the Roentgen ray is good. Of course we must remember that the Roentgen-ray work was done by an extremely skilful radiologist, and also that the surgery was done by very competent surgeons. I personally believe, as Dr. Lane said, that there are many crimes committed in the name of Roentgen ray. I think many people use radium who do not know anything about it. I have had cases in which the growth was simply stimulated by it, instead of destroyed; and I fear lest some men, using radium in too small quantities, do more harm than good.

As far as caustics are concerned, I do not see how any man with regard for the feelings of his patients will use caustics in preference to the Roentgen ray. No patient will ever elect the second use of a caustic paste unless he be a candidate for martyrdom. Of all caustics the use of the actual cautery, with either a local or general anesthetic, is the only one really fit for use. It gives many cures, and the cosmetic results are not as bad as many think.

DR. C. AUGUSTUS SIMPSON, Washington, D. C.: I agree with the other speakers that the use of small amounts of radium may not destroy, but simply stimulate, the growth of skin cancers. I also would like to apply the same statement to many of the Roentgen-ray equipments used by dermatologists. I am sorry to say that I find many well known dermatologists treating skin cancers with the cheap, little Roentgen-ray machines that do just as much harm and just as little good as an insufficient amount of radium. It is just as unreasonable and harmful to attempt to cure these lesions with a weak and inferior outfit as it is to attempt the same end with $300 or $400 worth of radium. In both instances the growth is more often stimulated than destroyed.

In regard to prickle-cell carcinoma, I will repeat what we have known for some years. Dr. Pusey's statistics relating to this lesion when located on the upper lip show that they are as amenable to Roentgen-ray therapy as basal-cell carcinoma. Naturally, if the glands are involved it is a case for surgery, to be followed by the Roentgen ray.

I do not think it is necessary to do a biopsy on every case of skin cancer by any means. If a microscopic examination seems necessary, remove the entire growth and then section it. We must remember it is a cure the patient seeks and pays for, and not statistics and a diagnosis. A biopsy and Roentgen-ray treatment on the same lesion seem to me to be inconsistent.

DR. SAMUEL E. SWEITZER, Minneapolis: I do not know the etiology of skin cancer—I should have said, the etiologic factors. Concerning the question of acute injury, I should say that of these patients, one gave the history of having been chopping wood, when a stick flew up and hit her, an ulcer formed and an epithelioma on the upper lid resulted. The sister of another woman gave her a little scratch; there was no defect there previously. I saw her within two months and she had an epithelioma on the side of the nose. In the case of a man with an eruption on the lower lip, he said it was a cold sore. After the cold sore had disappeared the lip did not heal and he had an epithelioma. I simply brought that out in the history taking. The only one I saw was in the case of a business man who, while shaving himself, made one single cut near the ear. He came to me in a few weeks with a tiny epithelioma with hard edges. Precancerous dermatosis is something which I think should be removed before the lesion starts, if possible.

In giving my treatment I said: First excision, then Roentgen ray, and then radium. I use the radium but I do not insist on others doing it. These lesions were all on the face and ears, in places which would show the results of the therapy. I am sure excision would leave more scar than I got by the means I used. I have had a number of patients who have had recurrences after excision. I agree with Dr. Hazen that it is preferable to excise in the prickle-cell cases and treat with radium afterwards. It must be borne in mind that the treatment varies in different hands.

Scarcity of Medicinal Plants.—The *Paris Médical* remarks that it does not at present advocate cultivating medicinal plants as this takes time and skill. But it does advocate collecting in the woods and fields the medicinal herbs now growing wild, or in gardens. It gives a list of plants that could be thus collected, describing their characteristics and habitat, the methods for drying and otherwise preparing them and the seasons when each should be collected. The necessity for extreme care, not to allow the herbs to get mixed, is emphasized, as many of the available plants are highly poisonous. Among these are mentioned aconite, belladonna, digitalis, datura, hyoscyamus and Solanum nigrum.

SANITATION IN THE TRENCHES

CHAMPE CARTER McCULLOCH, M.D.
Lieutenant-Colonel, United States Army; Professor of Military Hygiene, Army Medical School
WASHINGTON, D. C.

(*Concluded from page 87*)

V. THE PREVENTION OF SPECIAL DISEASES

We have in the army, in addition to the practice of the general sanitation of the troops in regard to food and water, conservancy, personal habits, etc., often to concern ourselves with efforts toward the prevention of certain diseases common in military life, some of them especially likely to occur under particular conditions of environment. Each camp, each war and each climate has had its own individual situation in this respect to be studied and handled by the military sanitarian. The European war, like the others, has developed its own characteristic liability to particular diseases.

Let us look for a moment at the development of the war in regard to a few of the most important and interesting of these diseases. They are no doubt familiar to most physicians, through the reading of the current medical journals, but for the sake of completeness I shall consider them briefly here.

In the consideration of the prevention of diseases in war, two points, always important in the study of disease, but especially so in military life, ought to be emphasized at the start. These are:

1. *Accurate Diagnosis.*—This statement at first glance would seem to be a sort of medical truism and unnecessary to repeat. However, when one recalls that in 1898, in our Spanish war, the doctors mistook a large proportion of the typhoid fever for malaria, with the result of great sanitary disaster, it seems just as well to bring it up again in this connection. No doubt we shall have better facilities for diagnosis in this war. The British have developed the field laboratory idea in a practical way. Before billeting troops in new areas or occupying ground recently captured from the enemy, they send out traveling motor laboratories in advance of the troops. These have been found necessary, especially on account of the German practice of poisoning wells. Metallic poisons are tested for and the water examined chemically and bacteriologically for gross pollution.

2. *Correct Statistics.*—For good preventive work, the army sanitarian must have reliable information as to the incidence of the various infectious diseases, the numbers of sick, and the geographic distribution in camps, regiments, etc. Statistics, indeed, are the necessary foundation for all effective sanitary work. However, the importance of this feature of the work is not always realized by the neophyte in practical sanitation. It affords a good example of the necessity of having experienced medicomilitary administrators in control of medical department affairs, and of the need of special training along these lines for recently appointed medical officers. Paper work and "red tape" are a great nuisance in the army, especially to new men, and ought to be cut down as far as possible. A certain amount of bookkeeping, however, is absolutely essential here, as in all well conducted business affairs in civil life. As another important example of this necessity, it should be realized that the enormous matter of the pensions that succeed a big war, or any large enrolment of men in the military service, even without fighting, has its foundation stone in the medical records of the period in question. Justice, both to the individual soldier and to his family on the one hand, and to succeeding generations of our tax-paying descendants on the other, absolutely requires the most intelligent and painstaking care in the preparation of medical records. As good sanitary work may, by prevention and elimination of epidemics, forestall the necessity for tens of thousands of pension claims, so also good medical administration may by prompt removal of wounded from the battle front, and quick return of well handled soldiers to the firing line, aid the military commander, as much as any other factor, in winning his country's battles. Our military men have not always recognized this fact, but I believe that at least in the regular army they are fast coming to appreciate the immense value to their work of the competent medical staff officer. Lord Northcliffe[5] has written in a most complimentary way of the administrative work of the Royal Army Medical Corps in this war. We learn from Colonel Goodwin that the British line officers now follow implicitly the sanitary advice of their medical staff, a consummation devoutly to be wished for in the new American army.

IMPORTANT DISEASE PROBLEMS

Among the more important disease problems of the present war are those afforded by:

1. *Typhoid and Paratyphoid Fevers.*—The practice of compulsory antityphoid vaccination has doubtless solved successfully for us the formerly serious question of typhoid fever in our army camps. The British have had some trouble in the present war owing to the fact that vaccination is voluntary in their army. Fortunately, however, owing to careful sanitation, the disease did not make great inroads on their fighting strength.

The place of typhoid as a military problem has now been taken for us by paratyphoid fever. Many of the milder cases diagnosed as typhoid fever in 1898 were no doubt paratyphoid infections, differentiation between the two diseases not having been made at that early date by the practicing physician. In fact, paratyphoid as a distinct disease entity was not known at all until 1896, when it was announced by Achard and Bensaude.[6] Glimmerings of the truth had, indeed, been seen earlier. Osler's statement of his belief that there were undifferentiated continued fevers in the South was no doubt a stimulus to the army surgeons, who, especially in Texas, made observations in this connection. Col. William B. Davis noted at Fort Clark, Texas, in 1892, "a hybrid between typhoid and malaria," and in 1894 I[7] described the symptomatology of a continued fever noted at various border posts, which I tried to differentiate from typhoid. We called this "Texas fever" in default of a better name, and I was inclined at that time, following Guiteras, to regard it as of thermic etiology. I was mistaken in this, and Davis made a better guess. I have no doubt, at present, that the disease observed in Texas was what we now call paratyphoid fever, though, doubtless from imperfect observation, I missed the "rose spots," which it seems should be found in at least 50 per cent. of cases of paratyphoid.

Reverting to present conditions, it seems that inoculation with a mixed vaccine of paratyphoid, types A

5. Saturday Evening Post, Philadelphia, April 28, 1917.
6. Achard, C., and Bensaude, R.: Bull. et mém. Soc. méd. d. hôp. de Paris, 1896, pp. 821-833.
7. McCulloch, C. C.: Rep. Surg.-Gen., U. S. Army, Washington, D. C., 1894, pp. 52-58.

and B, has prophylactic value against the disease. In fact, this measure has been used successfully both in Europe and in our camps on the Mexican border, where paratyphoid has recently been found to exist bacteriologically as well as clinically. Our troops in this war will therefore doubtless be vaccinated against paratyphoid fever as well as against typhoid. There is a rather severe reaction after inoculation with the paratyphoid B strain, but the British experience is that this is not serious enough to counteract its great value as a prophylactic.

The other intestinal infections, besides the continued fevers, are at present handled in a preventive way only by the ordinary methods of camp hygiene. Possibly something practical in a specific way may result in the future from the prophylactic administration of emetin in amebic dysentery and the development of the Japanese idea of vaccine or serum prophylaxis of the bacillary form, though it has not up to the present. It seems to me that this question of bacillary dysentery offers the best and most to be desired field for future research and experiment in preventive medicine, in connection with the needs of the army. If intestinal diseases could be excluded, army sanitation would be, to speak in the vernacular, almost "a cinch." It is worthy of note in this connection that raw vegetables seemed in the Philippines a potent means of the conveyance of dysentery and other intestinal diseases.

2. *Tetanus.*—This clinically hopeless and distressing affection gave rise to much trouble and mortality among the wounded in the early period of the war. It was found to be much more extensively present in the thickly settled areas, such as the Champagne district in France, than in more sparsely inhabited places—a question of soil pollution. It will suffice to say in this connection that a completely adequate solution of the tetanus problem has now been found: All victims of wounds of whatever character, simple scratches included, are given at the earliest possible moment after the receipt of the wound a prophylactic subcutaneous injection of 500 U. S. Army units of tetanus antitoxin contained in about 3 c.c. of horse serum; in the case of severe wounds, a second dose of the same strength is given on arrival at the base hospital. The first injection is given preferably at a dressing station or field ambulance, as soon as possible after removal of the wounded man from the firing line. When given in the small doses of serum stated above, the danger of anaphylaxis from the second or succeeding injections is negligible. This measure has entirely controlled the former troublesome situation, and tetanus is no longer feared by the surgeon.

3. *Infection with Gas-Forming Bacilli.*—This unpleasant and often dangerous complication of wounds, also owing to soil infection in the thickly populated and agriculturally worked-over sections of the battlefields of Belgium and France, has given rise to most serious trouble. Most of these infections are due to the *Bacillus aerogenes-capsulatus* of Welch, usually called, by the British, *B. perfringens*. About the only means available to us in prophylaxis is the attempt to minimize the influence of the predisposing causes of gas cellulitis or gas gangrene. These causes are the too tight bandaging of the limb, the too infrequent changing of dressings, and the lack of adequate drainage of wounds. I understand that an antitoxin has just been prepared for this bacillus. Let us hope that it will prove to have prophylactic as well as curative value. This is a surgical rather than a medical or hygienic matter, but it seems worthy of note in this place.

4. *"Trench Foot" and Frostbite.*—This particular effect of prolonged exposure to the cold and wet on dependent limbs had not been observed before the present war—certainly not on a large scale. The symptoms, speaking generally, rather closely resemble those of a preliminary peripheral neuritis, succeeded in severe or improperly treated cases by pressure gangrene, the successive pathologic stages being in the latter case, first, stasis, second, exudation, and third, gangrene. Rational measures of prophylaxis have been found to be:

(*a*) Drainage of the trenches by the military engineers, or, this being impracticable, the raising of the foot level in the trenches by fascines of brushwood.

(*b*) The thorough rubbing into the feet and legs of whale oil or antifrostbite grease.

(*c*) The wearing of long rubber boots. In any case the avoidance of pressure by tight shoes or puttees. The socks should be kept dry (by greasing the shoes) and changed daily.

(*d*) Keeping the legs elevated while resting, and the avoidance of the sitting posture in sleeping.

(*e*) Keeping up the physical condition of the soldiers by proper nourishment and warmth (as far as possible) and the avoidance of fatigue. Basil Hughes recommends the frequent use of hot soup and also the rum ration in selected cases.

Dampness in gun emplacements is a fertile cause of bronchitic and rheumatic affections, and should be obviated by care in construction. Water should be drained to the outside of the "cave," rather than under the floor, or it should be periodically pumped out. Walls are made double and filled with sand or brushwood and iron sheathing is incorporated in the earth covering of the emplacement.

5. *Trench Fever.*—This disease is another of the developments of the peculiar environmental conditions of the war in Europe. Briefly, the symptoms are those of a relapsing pyrexia extending over a time varying from a few days to several weeks, usually coming on suddenly with headache and pain in the back and legs, and having no specially characteristic features beyond these and painful, tender shins. It thus resembles the European relapsing fever, though as yet no spirochetes have been found in the blood. Suspicion points to its conveyance by the body louse, and rational prophylaxis would therefore point, as in typhus fever, to measures chiefly directed against these vermin—to isolation of patients, the disinfection of clothing and the protection against lice of the attendants on the sick. The internal administration of quinin has been recently suggested as a prophylactic in typhus fever.

6. *Gas Poisoning.*—This remarkable German contribution to warfare was a great surprise to the Allies when first sprung on them, and a great many men were "gassed" in the early stages of its employment with distressing and often fatal results, generally due to asphyxia in those not killed at once by the poison. Prevention was quickly stimulated, however, and gas masks and gas helmets were devised which, saturated with certain chemicals, served to neutralize or nullify the bad effects both of the "shell" and "drift" gases used by the enemy. It is hardly worth while to speculate on the chemical composition of the various gases and their antidotes, as the different armies have vied with each other in their production, and keep them as strict military secrets. It suffices for our present

purposes to know that all soldiers in the trenches are furnished with the proper masks and taught how and when to use them, and that at present it has resulted that the gas attacks are no longer feared and seldom do any really serious damage.

7. *Cerebrospinal Fever.*—Outbreaks of this rather mysterious affection are quite common in army camps. Infectibility, though it appears to be slight, is not negligible, and it seems probable from later experience that, owing to defective knowledge of its means of spreading, we have not perhaps, in the past, been quite so strenuous in our prophylactic measures as we should have been. Today, whether rightly or wrongly it is difficult to say, we think it advisable to act on the "carrier" theory of the propagation of the disease. Adequate ventilation appears to be essential. We now isolate patients, and contacts, as far as possible, examining the latter bacteriologically to try to determine whether or not they may be possible carriers; we disinfect bedding and other formites; we destroy food and waste matter in infected premises. The throats of carriers are swabbed with 3 per cent. iodin in glycerin or some equivalent solution, or spray is used as an alternative. As it is thought possible that flies may act as vectors, they and their breeding places are attacked *secundum artem*. Munson[8] has written convincingly in regard to the prevention of the spread of diseases conveyed by means of the secretions of the nose and throat, taking measles as a text. He emphasizes the importance of ventilation, of fresh air and of sunshine. I am also inclined to follow Wells of Chicago, who says that pneumonia (and other respiratory infectious diseases) could be largely controlled by the popularization of the use of the pocket handkerchief, that is, holding it over the nose and mouth whenever sneezing or coughing. This plan does not seem impossible of realization when we consider the success of the educational campaign of recent years against promiscuous expectoration.

8. *Malaria.*—Owing to the ubiquitous nature of the *Anopheles* mosquito, troops in the field are in most countries exposed at times to malarial infection. This, while not usually dangerous to life in temperate climates, can nevertheless by its effect on the sick reports often become quite troublesome to armies in campaign. It behooves us, therefore, to be awake to the possibility, and in malarious locations, to employ the accepted methods of prophylaxis. The temporary nature of army occupation makes it generally impossible to carry out all the painstaking methods that were employed, for instance, at Panama; still, a great deal can often be done by simple and easily employed means of prevention. The use of the mosquito bar and head net at night (with at least eighteen meshes to the inch) should be employed in camps liable to malarial infection; small pools should be filled in and larger collections of water carefully oiled weekly by spraying (1 ounce of kerosene to each 16 square feet of surface), or treated continuously by a drip can; water tanks should be screened, and old tins, bottles, etc., looked after. The application, on exposed parts of the body, of the essential oils gives some help, though not reliable alone, and something may be done by "swatting" adults locally. The administration of 6 grains of quinin daily proved to be a prophylactic of value in the antimalarial work on the Panama Canal.

8. Munson: Mil. Surg., June, 1917.

Owing to our adequate modern methods of quarantine, *cholera* and *plague*, formerly so much dreaded in camps and wars, are not at all likely to be introduced on the western battle front. If they should by any chance get a foothold, the resulting conditions would most likely prove to be serious. The crowding, on the one hand, and on the other the enormous numbers of rats that are present in the trenches and billets, would make the proper prophylactic efforts very difficult of execution. In the event of the introduction of either of these diseases, I am inclined to believe that the sanitary authorities would promptly try the effect of prophylactic vaccination, for the reason that while the efficacy of this procedure is not fully proved on a large scale, still it has given promise of good results. In addition, the already well established preventive methods of control would, of course, be employed, as they have been so often and so successfully in both hemispheres by the officers of our distinguished Public Health Service.

CONCLUSION

I wish to repeat that this sketch is not by any means intended to cover all the ground of military medicine, and all the diseases of camps and armies; this could not be done, indeed, in the space of any journal article, however concise. I have, however, tried to outline briefly the essential points in the prophylaxis of the most frequent and important diseases that we are likely to encounter on the western front in Europe, particularly those that seem to be in some respects newer developments of the peculiar environmental conditions of the present war.

Even this "indication" has, I am too keenly aware, been imperfectly handled. I shall be amply satisfied, however, if I am successful in arousing the interest of some of our prospective young medical officers in the sanitary aspects of the war and in stimulating them to further study of the literature (cited above) of this so important and timely subject.

THE ABORTIVE TREATMENT OF WOUND INFECTION

CARREL'S METHOD—DAKIN'S SOLUTION *

WILLIAM O'NEILL SHERMAN, M.D.
PITTSBURGH

Nearly all of the truly great discoveries in medicine and surgery have had to combat skepticism, worn out dogmatism and even the open hostility of a large part of the profession before their general acceptance has been obtained. Imagine, for a moment, the trials of those surgeons who, in their broadness of mind, first dared to brave the anger of their brethren in the hippocratic creed when they "cut for stone"; now, all unite in honoring that specialty whose field is so important and beneficent. The great military surgeon of Charles IX, Ambroise Paré, was ostracized and nearly lost his life because he dared to substitute healing balms for boiling oils in the treatment of wounds of war. His use of the hemostatic ligature called forth a storm of protest and was not generally accepted for

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* By "Dakin's solution," wherever it occurs in this article, I mean neutral solution of chlorinated soda as described in New and Nonofficial Remedies, 1917, p. 141, and in THE JOURNAL A. M. A., Dec. 9, 1916, p. 1777.

years. Still later, Larry, chief surgeon to the great Napoleon, was constantly under suspicion of his colleagues for presuming to overturn their long established tenets. The practice of vaccination and the use of diphtheria and other antitoxins have been, and still are, subject to adversity even after their efficacy has been undeniably established. The first ovariotomy was performed with a hostile and howling crowd outside the house awaiting its outcome.

The contention over antisepsis, and still later, the subject of asepsis, is still within the memory of many today. Such examples might be indefinitely multiplied. These tests, however, which we at first may regard as unfortunate, may quite likely be blessings in disguise, as they serve to separate the wheat from the chaff. Once their sterling worth has been proved, those who offered the greatest resistance to their use are often the first to honor and approve.

The status of the latest treatment for the prevention or abortion of infection, as devised by Dr. Alexis Carrel, is no exception to the rule. Skepticism, jealousy and doubt have been directed against it, to our credit let it be said, largely by others than American members of the profession. Those who have had the best opportunity to study Carrel's method thoroughly and observe its results believe that it ranks as a life-saving, limb-saving and time-saving procedure, almost equal in importance with the advent of antisepsis. It is humiliating but nevertheless true, that sanitation and preventive medicine have far outstripped the advance in the surgical handling of industrial and military wounds, so far as prevention of infection is concerned. During the Spanish-American War, the deaths from sickness outnumbered those from wounds in the proportion of 6:1, bearing out the old tradition that disease is more deadly than bullets. That a startling change has taken place, however, is borne out by the statistics gathered among the Canadian troops in the present war, in which the proportion of deaths due to disease to those from wounds, instead of being 6:1, is but 1:20. These figures include not only those actually engaged but also the entire Canadian contingent from the time of its enlistment during the nearly three years in camp and trench, and represent less than 1.5 per cent. of the total casualties. Out of 5,242 officers and men who have not been killed outright but wounded, of those dying after the first twenty-four hours, 80 per cent. of the deaths have been directly traceable to infection. Furthermore, according to Tuffier, consulting surgeon of the French, 80 per cent. of all amputations have to be performed because of infection, and from 95 to 98 per cent. of all secondary hemorrhages are due to the same cause. While in our own civil and industrial surgery, owing to better facilities for early treatment, these figures may not be so high, still it is true that a large proportion of deaths, amputations and of prolonged disability can be directly traced to infection. The part played by infection and the prime importance of its control were early recognized by Carrel, who for over two years has bent every effort toward its solution, with the result that now, for the first time in history, we have a method which, if resorted to sufficiently early, will not only positively prevent and abort infection of any sort but will eliminate it in from one to three weeks after it has become fully established.

Fig. 1.—Crush of leg, with loss of skin and soft parts; wounds sterilized, and closed by rubber ligature suture and silkworm-gut sutures; excellent functional result.

Carrel, in conjunction with Dakin, who had charge of his chemical laboratory, carried on his work first at Tuffier's laboratory at the Beaujon Hospital, Paris, and later at Military Hospital 21, Compiègne, under the direction of the Rockefeller Institute. The Carrel-Dakin treatment comprehends the direct sterilization of wounds with their subsequent secondary closure by suturing or strapping. The procedure to be successful requires:

1. The proper initial and early care of the wound; clearing and cleansing.
2. The specific antiseptic hypochlorite solution (Dakin's solution) prepared after the formula of Daufresne.
3. The standardized armamentarium of Carrel.
4. An exact application of the principles of a simple but all important technic.
5. Absolute aseptic redressings.
6. Bacteriologic control of the time of closure.
7. Approximation of the margins and closure of the sterile wounds by suturing, lacing or strapping.

The success or failure of the treatment largely depends on the mode of procedure at the first dressing. This is preparatory in character. If necessary, a general anesthetic is employed. Under aseptic precautions, all areas surrounding the wound are shaved and cleansed with benzin or ether, followed by painting with tincture of iodin. With scalpel or scissors, the bruised or devitalized skin margins are carefully cleared away. Now, with fresh sterile instruments, the entire wound and all its ramifications are laid freely open, permitting of no pockets or secluded recesses. Under careful and delicate exploration, foreign matter, clothing, shell fragments, bullets, unattached bone fragments, infected or likely to become infected tissues, and the tissues which appear to be devitalized are carefully excised. All bleeding points are carefully controlled and blood clots removed. This is necessary because the solution of sodium hypochlorite possesses the property of dissolving blood clots, and hence, if proper precautions are not taken, may cause severe secondary hemorrhages. This constitutes the wide "débridement" spoken of by Carrel as necessary in prompt clearance and cleansing of the wound and subsequent successful application of the treatment.

Chlorinated lime is probably one of the oldest antiseptic chemicals known to science, and from this standpoint, the solution of hypochlorite constitutes no new discovery. The discovery of the combination of this chemical, however, which will permit of its safe use in the living tissues without destroying them, con-

stitutes the great advance in its use. The antiseptics used heretofore by surgeons have been either too strong, causing destruction and necrosis of the tissues with which they come in contact, or so weak that their effect on the infecting organisms was negligible, thus resulting only in injury to the cells of the tissues without killing the microbes.

After experimenting with some 200 antiseptic solutions, of various kinds and strengths, Dakin at last succeeded in compounding a solution of sodium hypochlorite which was later modified by Daufresne but still known by the name of Dakin. The formula for preparing this solution should now be too well known to demand its rehearsal. Caution should be given, however, that Daufresne's modified formula be not confused with Dakin's original formula. Unfortunately, the latter is in use in various parts of the country, and owing to its greater causticity and lower bactericidal properties, will not give the results claimed for the true Daufresne-Dakin solution (neutral solution of chlorinate soda).

Great care should be exercised in the making of the latter solution, which must contain to be effective, from 0.45 to 0.5 per cent. sodium hypochlorite, the causticity of which has been thoroughly neutralized by adding the proper proportions of sodium bicarbonate and sodium carbonate; the antiseptic thus obtained is absolutely nontoxic, noncaustic and nonirritant to the tissues, and possesses a high bactericidal power. It is from fourteen to twenty-two times as bactericidal as phenol (carbolic acid). Its low cost, together with the possibilities of its use in practically unlimited quantities, makes it an ideal antiseptic. The solution is not difficult to make. Too much emphasis cannot be made on the necessity of titrating and testing for free caustic every time the solution is newly made. The unstableness of bleaching lime makes this imperative. Certain critics have stated that Dakin's solution is similar to Javel water and Lebarraque's solution. There is nothing in common in the clinical and bacteriologic appearance of wounds treated with Dakin's solution and other hypochlorite solutions. Close examination of the formula will readily disclose the difference. On my return from Europe, I found that few druggists or chemists in the United States were making Dakin's solution properly. In many of the largest cities and hospitals, the solution was faulty, no attempt being made either to titrate or to free the solution from alkali. In many cases, these solutions had been in use for from nine to twelve months. While the end-results were generally better than under other methods, they were far from ideal. Daufresne has been working on a new process of making Dakin's solution electrically. To this potassium permanganate is added to insure greater stability; the details of this work will be forthcoming at an early date.

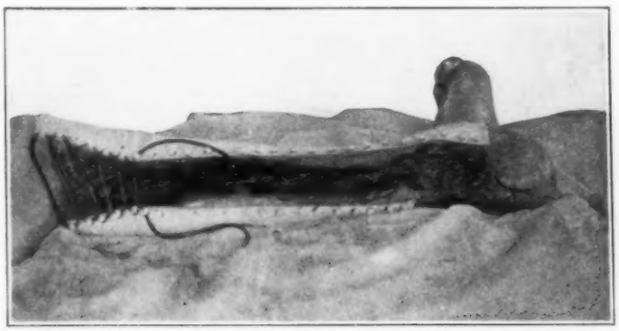


Fig. 2.—Manner of closing with ligature.

Sodium para-toluenesulphochloramin, sold in this country as Chlorazene (Abbott) and under different names abroad, is a coal tar derivative, and while it is stable and a very efficient antiseptic, it does not have the same properties as Dakin's hypochlorite solution. Where Dakin's solution cannot be made, sodium para-toluenesulphochloramin can be used as a substitute, though it should be borne in mind that the hypochlorite solution of Dakin is much to be preferred and is also less expensive.

THE STABILITY OF DAKIN'S SOLUTION

The Coleman laboratories have prepared several hundred gallons of Carrel-Dakin solution (Dakin's solution made according to the technic of Daufresne) and have been frequently asked, "How long will the solution hold up?" In order to answer this question intelligently, they made a series of experiments with solutions kept under various conditions, and tested them at frequent intervals to note the rate of decomposition. The formula used in the preparation of the solution has been published,[1] and is known as the Daufresne technic, as used by Carrel. The concentration of sodium hypochlorite in the solution must be exactly between 0.45 and 0.50 per cent. Below 0.45 per cent. the solution is not sufficiently active; above 0.50 per cent. it becomes irritating.

A series of six half-pint bottles were filled with a solution containing 0.52 per cent. sodium hypochlorite and kept as indicated in Table 1.

Ten c.c. were taken from each bottle, and 20 c.c. of 10 per cent. potassium iodid solution, and 20 c.c. of acetic acid (36 per cent.) were added and titrated with tenth-normal sodium thiosulphate solution, after first being standardized against tenth-normal iodin solution. The results are given in Table 2.

The figures show that:

1. A solution kept in a clear glass bottle exposed several hours a day to direct sunlight decomposes quite rapidly and is useless after several days.

2. The same solution kept in an amber bottle under the same conditions decomposed much more slowly and was satisfactory until thirty-one days after the first exposure.

3. The solution in a flint bottle, exposed only to diffused daylight, remained satisfactory for thirty-five days.

TABLE 1.—CONDITIONS UNDER WHICH SOLUTIONS WERE KEPT

No. of Solution	Kind of Bottle	Conditions
1	Amber	Kept in closet on shelf near floor
2	Flint	Same as No. 1
3	Amber	Shelf in laboratory, getting diffused daylight, but no direct sunlight
4	Flint	Same as No. 3
5	Amber	By window, getting afternoon sunlight
6	Flint	Same as No. 5

4. The same solution in an amber bottle, exposed under the same conditions, shows a much slower decomposition, and is still satisfactory at the end of forty days.

5. The two solutions kept in a closet on a shelf near the floor, in flint and amber bottles, respectively, have shown no difference in the rate of decomposition as

1. Carrel-Dakin Solution, Queries and Minor Notes, THE JOURNAL A. M. A., Dec. 9, 1916, p. 1777.

far as the bottles are concerned. Both solutions are going down slowly, and both contain 0.506 per cent. sodium hypochlorite at the end of forty days' trial.

CARREL TECHNIC

The mode of action of the hypochlorites is not as yet definitely known. Dakin has been unable to find any evidence in support of the theory that their antiseptic action is due to the liberation of oxygen in the presence of organic matter. The application of hypochlorite solutions to animal tissues is productive of the evolution of chlorin rather than oxygen. It appears, therefore, that this liberation of chlorin occurs when Dakin's solution is instilled into the wound, and that this chlorin acts on the organic matter present with the conversation of some of the >NH groups of the proteins into >NCl groups, producing new substances which are chemically known as chloramins. These chloramins are known to possess the same bactericidal properties as the hypochlorites do themselves, and it seems probable that it is through their action rather than through the liberation of oxygen that their direct bactericidal effect is obtained. In addition to this direct bactericidal action, Dakin's solution possesses a hyperisotonic effect which results in the flow of lymph from the surface of the wound, thus preventing the usual rapid absorption of toxic products through the lymph channels. This partial reversal of the lymph flow may, at least to a certain extent, account for the well known absence of evidence of lymphatic involvement in infected wounds treated by the Carrel method.

TABLE 2.—RESULTS OF TESTS

Days	1	5	7	14	19	21	26	31	35	40
Sample 1	.522	.522	.514	.510	.510	.510	.510	.510	.506	.506
Sample 2	.522	.522	.514	.510	.510	.510	.510	.510	.506	.506
Sample 3	.522	.522	.514	.510	.510	.510	.510	.510	.506	.502
Sample 4	.522	.516	.502	.487	.480	.476	.469	.461	.450	.413
Sample 5	.522	.510	.495	.480	.476	.473	.465	.458	.435	

Fig. 3.—Result, Feb. 7, 1917.

Time will not permit of a detailed description of the Carrel apparatus; nor, indeed, should this be necessary, since there have previously appeared several communications thoroughly describing the apparatus and emphasizing the importance of the equipment as worked out by Carrel. Many of the failures which have been recorded have been due either to the incompleteness of the equipment used or to unwarranted efforts at its modification. Carrel's apparatus was devised solely and entirely for the purpose of enabling one thoroughly to saturate and bathe repeatedly every part of the wound with the solution without the necessity of frequent redressings. For this reason, what may seem an overabundance of the number of tubes should be used in dressing the wound in order that there shall be no part of the wound surface which will not be readily reached by the solution when it is injected. Two, four, eight, ten, twelve and even twenty tubes are necessary in a single wound.

The fluff gauze which is lightly laid between and about the tubes serves only to retain the solution in contact with the tissues during the interim between the installations, which are carried out every two hours. The gauze also fixes or holds the tubes in position. This time interval between injections has been found by experience to be the most efficient in keeping the wound saturated or bathed with the antiseptic continuously. At no time should so much solution be permitted to enter the wound as will more than fill it and saturate the bedding, but just enough to permit of complete saturation of the gauze dressing. One might look on the method as one of a continuous bath confined solely to the infected tissues. One can readily judge from experience the exact amount of solution necessary completely to lake or puddle the wound. *The method is not one of continuous drip (Murphy), and if this is attempted, failure is sure to follow.* The method is one of instillation under pressure every two hours. The solution should spray from the small holes staggered in the tubes made by a special punch, as water sprays from a rose spray. Certain pharmaceutical firms have placed on the market an apparatus which, if used, would spell certain defeat. The expense of the apparatus, together with the many complications, prohibits its use. Carrel's *standardized apparatus* should be used. *The method is not one of drainage. It is directly the opposite;* the Carrel tubes carry Dakin's solution into the wound and do not carry anything away. Most surgeons find it extremely difficult to give up their ideas of drainage. They persist in attempting to drain by making numerous counterincisions, and as a result, much of the solution runs away. Dependent drainage is not used unless for special indications. Too many rather than not enough tubes will be found to be beneficial.

As Dakin's solution is somewhat irritating to some skins, it is necessary to surround the margins of the wound for a distance of 3 or 4 inches with bandage gauze impregnated with sterile petrolatum. Bandage gauze No. 4 mesh, from 2½ to 3 inches wide, is cut into suitable lengths; this gauze is placed in trays (catheter trays preferred) and covered with melted liquid petrolatum. It is then placed in an autoclave and sterilized, after which the excess of petrolatum is poured off and allowed to cool. The strips of bandage which are enmeshed with petrolatum can then be readily peeled out of the tray and placed on the skin. This sufficiently protects the skin from any possible ill effects.

The vessel containing the solution should be attached to the head or the foot of the bed, never more than 3 feet above the level of the wound, and should pain be experienced when the solution is permitted to run into the wound, the reservoir should be lowered in order to diminish the force of the stream.

Greatest care should be exercised in the redressing of these Carrel-treated wounds in order that we shall not daily be reinfecting the tissues which we are attempting to sterilize. This is quite possible if any of the instruments or dressings which come in contact with the skin about the wound are used in the wound itself. The dressing should be entirely instrumental.

When the dressings are removed, the tubes are taken from the wound and the petrolatum gauze from the surrounding skin. Cotton sponges moistened with commercial ether are then used to remove the excess of petrolatum and to cleanse somewhat the skin areas. This is followed by thorough and careful cleansing with a neutral 8 per cent. solution of sodium oleate followed again by saline and ether to dry the surface of the skin. The petrolatum protectors are then reapplied. The dressing forceps which have been used up to this stage are laid aside and a fresh sterile set employed in reinserting the tubes and fluff gauze. Before this is done, however, the surface of the wound should be lightly cleansed with sodium oleate and salt solution.

The granulation tissues of wounds treated with Carrel's method have an entirely different gross appearance from granulations treated with any other method. They are bright red, resembling much the gross appearance of a cross-section of beef muscle. After the infection subsides, the granulations can be rubbed with gauze sponges, free from pain and bleeding. They are firm and well organized, never becoming superabundant. If the dressings or granulations are painful, infection is present. After the granulations are sterile, reinfection can easily be caused by carelessness in technic. The skin must be scrupulously cleansed at every dressing to prevent infection of the wound. If Dakin's solution is stopped, the wound will rapidly become reinfected. This question is frequently asked: "Can the same results be secured with solutions other than Dakin's hypochlorite?" Emphatically, no. Depage and Carrel in exhaustive experiments tried out a great many solutions (salines, phenol [carbolic acid], mercuric chlorid, etc.), and found that a wound could not be kept sterile with these solutions and that they could not be sutured with any degree of safety.

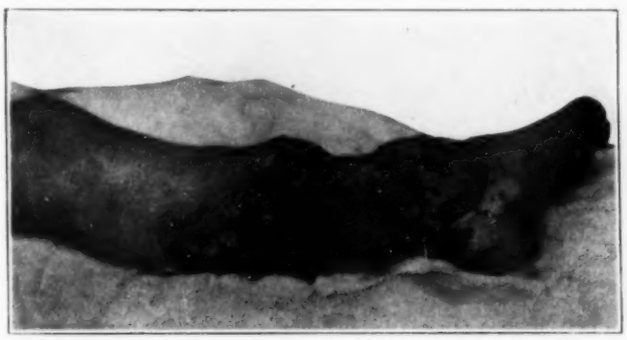


Fig. 4.—Crush of leg, Jan. 16, 1917; all tissues severed except posterior tibial artery, and soleus and gastrocnemius muscles; extremity saved from amputation with regeneration of bone, soft parts and skin; granulating wound healed with skin graft.

Ordinarily, dressings are repeated every twenty-four hours, but when necessary, it is perfectly safe to permit them to remain for two or three days. This should not be done, however, if circumstances will permit of daily dressings.

The Carrel tubes are boiled daily before they are used. The linen or silk which ties off the end of the tube is removed, and the interior of the tube is cleansed. If this is not done, collections of débris will be found in the interior of the tube which tends to clog up the tube. The interior of the glass container should be cleaned every day, as a precipitate tends to form on the bottom of the container which rapidly becomes caustic, and if allowed to remain will cause burning and much discomfort to the patient. If the patients complain of pain or discomfort, one can be sure that the solution is either caustic or there is some error in the method of introducing the solution. The Turkish towel covered tubes are used *only* for the superficial wounds. They remain more firmly fixed than the plain rubber tubes.

Every aseptic and antiseptic precaution must be carefully carried out from the beginning to the end if success is to be obtained. While the method is very exacting, it is not difficult if the principles are thoroughly mastered. A dressing carriage should be so arranged as to permit of its being used in the surgical wards. This table or carriage contains: trays for plain Carrel tubes (assorted sizes); for Turkish towel covered tubes; two trays for petrolatum gauze (various sizes); sterile forceps and hemostats, scissors and scalpels, for soiled instruments and for soiled Carrel tubes that are removed at dressing; one ether bottle; jar for cotton sponges, for small gauze sponges, for large gauze fluffed sponges, for flat gauze sponges, and for Turkish towels; three half gallon bottles containing sodium oleate solution, Dakin's solution and physiologic sodium chlorid solution; jars for bandages; one irrigation bottle, and three small basins for Dakin's solution, saline and sodium oleate. If the dressing carriage is conveniently arranged with this equipment, sponges, instruments, gauze, etc., the great majority of the dressings can be done in the general ward. This work can be so organized that while more time and detail are required, little or no difficulty is encountered in the thoroughness with which the dressings are being made. The time consumed in making the dressings is more than compensated for by the great saving of time in the convalescence.

In order thoroughly to master the method, one should spend at least three weeks observing the treatments. Special instruction should be given physicians and nurses in all the detail; one cannot follow the method or secure the remarkable results of Carrel unless one is thoroughly familiar with the method. Those who decry the method are not familiar with the technic, which represents 80 per cent. of the cure. We have had no difficulty in instructing interns and nurses so that in a short time they all become proficient. I have trained a nurse to make the smears, stain counts and keep the bacterial charts so that this feature of the method is now being done very well. The method is not difficult, but it is exact, and one must master the details, or failure is certain to result.

TREATMENT OF INFECTIONS OTHER THAN THOSE OF WAR

The Carrel technic with Dakin's solution is undoubtedly a specific so far as infection of wounds is concerned. It not only aborts infection if used early, but cures it when once established, provided the focus is within reach of a Carrel tube. It is being used successfully in the treatment of suppurations following radical operations on the frontal and the mastoid sinus, and infections about the mouth and teeth (if a technic can be devised in the treatment of pyorrhea, one can hope for success; the present technic is to follow the mechanical cleansing of the teeth by packing around the gums loose pledgets of cotton, this cotton to be kept saturated with Dakin's solution by applying the

solution with cotton applicators for five minutes every hour; the peridental membrane is also injected with a platinum syringe); suppurating glands and abscesses of the neck, empyema, fecal fistula, walled off abdominal abscesses, suppurating tuberculous lesions, osteomyelitis, suppurating joints, chanroidal infections, ischiorectal abscesses, cystitis, uterine infection (technic of author), and infection in wounds following operations, etc.

The introduction of a tube into a sinus leading to necrotic tissue will not sterilize the infected area; all infections must be freely opened and the necrotic tissue must be removed. If this is followed by Carrel's method, suppuration is held in abeyance. If a rubber perforated tube is introduced into a sinus, the walls of the tube come in close contact with the walls of the sinus, plugging up the holes in the tube and preventing the solution from bathing the infected areas.

In order definitely to know the progress in treatment, it is absolutely necessary to make frequent bacteriologic examinations. This is done every second or third day. The technic is simple. A smear with a platinum loop from the surface of the wound is made on a glass slide and stained with one of the simple stains. It is then examined under a one-twelfth or one-sixth oil immersion lens, and the number of bacteria per field noted on the bacterial chart. When this number fails for three successive counts to an average of one microbe to five fields, twenty fields being examined to secure this average, the wound may then be considered surgically sterile and capable of being closed without danger of subsequent suppuration.

Fig. 5.—Appearance, January 30, of injury shown in Figure 4; arrow points to hole through leg; shin bone appears just below this hole.

If possible, closure should be made by suture. The granulation tissue over the surface of the wound is removed, the edges of the skin freshened, and raised over the underlying tissues to permit sliding the skin margins together. If the tension is too great, lateral incisions may be made to permit of easy approximation of the skin margins. If suture is impossible because of loss of tissue, the wound may be laced or strapped together with adhesive plaster. The lacing is accomplished by gluing strips of flannel along the edges of the wound by means of a special glue. Attached to the edges of the flannel strips are numbers of ordinary shoe hooks about one half inch apart. The laces are of rubber similar to the old McGraw ligature.

Under bacterial control, from 90 to 99 per cent. of wounds may be closed and union obtained by first intention.

The appearance of these wounds when healed is extraordinary and very typical. They resemble nothing so much as postmortem wounds (C. L. Gibson) in that there is no redness either about the stitches or along the line of incision, and neither drainage nor swelling.

COMPARATIVE RESULTS OF THE CARREL AND OTHER METHODS

I had excellent opportunities to study the various methods of wound treatment used in the English, French, Belgian, American and Canadian base hospitals. *Practically every wound seen except those treated by Carrel's method was infected.* The mortality from infection being high, amputations unnecessarily common, with secondary hemorrhage a frequent occurrence, thousands of the wounded were crippled for life beyond the possibilities of surgical repair. Many of the wounded were returned to Canada and sent to their homes uncured, the latent effect of infection in bones, joints and cicatrices being present.

There were few surgeons who believed that wounds could be sterilized and sutured, because it had never been done before. They refused to accept the technic of Carrel, and persisted in maintaining that there was nothing new in the method. This attitude on the part of those who strenuously opposed and fought the Carrel method has greatly retarded the general acceptance of the method. In France, Tuffier, Gosse, Lyle and Carrel were the only ones using the method correctly. Depage at La Panne, Belgium, was an enthusiastic supporter. Not one hospital in England was using the method at the time of my visit there in July and November, 1916. Pedro Chutro at the Hospital Buffoon, Paris, was daily demonstrating the fact that suppuration when well established could be cured, and that these infected wounds could be sutured or closed with adhesive plaster, with union by first intention. The contrast between the patients of Chutro and those treated by other methods was striking. Sepsis, anemia, pallor, emaciation, high temperature or pain was not seen in the cases of Chutro, Depage, Carrel and Lyle, because infection was under control. The frightful complications, chronic sepsis, anemias, etc., were to be seen in all hospitals in which Carrel's method was not used. Tourniquets were to be found in every ward and frequently seen attached to the bed in anticipation of secondary hemorrhage — the result of infection.

From information given me by Tuffier, Sir Alfred Keogh (surgeon general of the British army), Piedro Chutro (professor of surgery at the University of Buenos Aires, Argentina) and Dr. Carrel, it would be conservative to say that at least 150,000 lives and 75,000 amputations, with hundreds of thousands of cripples could have been prevented had Carrel's method been made obligatory in the Allied armies. If vaccination against typhoid and smallpox is obligatory, why should the wounded be allowed to die from infection? Carrel's method is a proved specific, and all military and civil surgeons and nurses should receive three or four weeks' instruction in the use of the method if America is to profit from the mistakes of

the Allied army surgeons. The wonderful bravery and self-sacrifice of the wounded entitle them to everything that science has to offer. If the medical profession fails to accept and put into practice this epoch making advance, it is sure to be indicted for negligence and will be held responsible for many deaths, amputations and hopeless cripples that could have been prevented.

ABSTRACT OF DISCUSSION

DR. CHARLES L. GIBSON, New York: History repeats itself. If any of you have read the beautiful life of Lord Lister you will see that Lister failed to receive recognition in his own country for nearly twenty years. On visiting Carrel last year I was able to confirm his statement that he was able to eliminate suppuration. I also had the opportunity of seeing this work done to perfection at the clinic of Dr. Pepage of Belgium. He is doing like Carrel, because he took the trouble to learn how. The average idea of Carrel's method is slopping on a solution of hypochlorite, which may not be Dakin's solution. I found many people in Paris condemning the Carrel method, but not one of them had taken the trouble to see Carrel's own results. Depage used the method right, because he not only sent assistants and nurses, but studied it with Carrel at Cambridge. The usual principles of good surgery are as much of a necessity to success with the Carrel method as they always have been. Depage had in one ward eighty fractures treated by the Carrel method. I saw every dressing, and I did not see one drop of pus in these eighty patients! It is said that similar results can be obtained by other methods, but I have got to see such results. These cases of Depage's are treated early. These are ideal conditions and of course are seldom at hand and must be given due credit for some of the good results. If we have to deal with a well established suppuration, we have a different problem; but even in the late cases the method has considerable influence on the suppuration. It has been said that various other methods and substances will give similar results, and Depage carried out a series of control cases. In none did he find anything that would make him wish to give up the Carrel method. Carrel and Dehelly have just written a book, which is published by Balliere, Tyndall and Cox of London, and I recommend a faithful study of it.

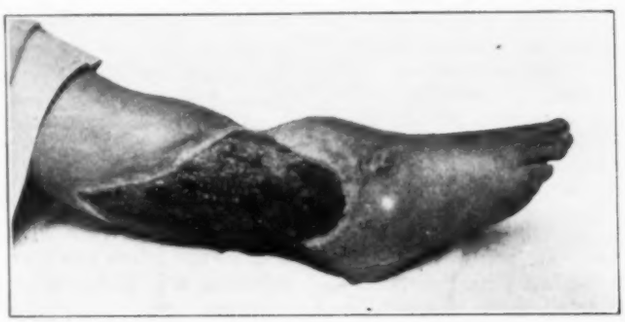


Fig. 6.—Appearance, April 27, of injury shown in Figures 4 and 5.

In the practical application of the method the particular pitfalls which I have observed are: (1) the improper preparation of wounds and failure to remove foreign bodies, necrotic material, etc.; (2) failure to make free incisions and suitably placed incisions in which every portion of the Dakin fluid can come into direct contact with all portions of the wound; (3) failure to utilize tubes of proper caliber, with suitable perforations as regards size, number and situation; failure to place them so that every portion of the wound is properly moistened by the solution; (4) failure to introduce the fluid under proper pressure so that all of it runs out as a spray and does not trickle out of the first hole; (5) introducing the fluid under too much pressure. Excess of pressure is produced (Carrel and Dehelly) either by too great an elevation of the container, or with small-sized incisions, which prevent the easy outflow of the fluid between the wall of the wound and the tube. This excess pressure is manifested by pain. If the introduction of the fluid at any time causes the patient pain, it must be discontinued and the technical fault corrected. In addition to pain, too great a pressure may result in absorption of the fluid, with resulting hemolysis and possibly death in a short time. It is possible that in certain wounds, as, for instance, an appendiceal abscess in which a loop of gut presents, absorption may take place, with disagreeable and perhaps fatal results if the condition is not recognized. On one occasion there was quickly produced a change in the patient's condition and transitory jaundice. As soon as these manifestations appeared treatment was discontinued and the patient recovered; (6) failure to place the tubes so that the fluid runs down hill and not up hill, a very frequent source of error, as I have found; (7) failure to locate the perforations in the tubes so that they are all contained within the wound, not allowing the fluid to run out on the skin; (8) the use of too much fluid so that the wounds are drowned out and the fluid runs out on the skin, with disastrous results; (9) the use of packing and tampons in the wound, which prevents free access of the fluid to the bacteria; (10) failure to realize the evanescent character of the hypochlorite and its dilution by wound secretions, in that the wounds are not moistened regularly every two hours as prescribed; (11) failure to protect thoroughly the skin with yellow vaselin smeared on gauze; (12) failure to use the correct solution, which is usually lacking in strength, there being only 0.05 margin between efficiency and danger. In addition to the difficulty of getting perfectly correct proportions of the active chlorin, there is very grave danger of over alkalinity, giving rise to burning and caustic action in the wound. The proper solution should *never* cause any pain. The appearance of pain should be a signal for the immediate discontinuance of the solution and an investigation of its composition.

DR. GEORGE W. HAWLEY, Bridgeport, Conn.: [Dr. Hawley presented a number of moving pictures of a case being dressed according to the technic as perfected by Carrel after two years' work in his experimental hospital. Each step in detail was demonstrated and explained by legends, followed by a series of cases in different stages of progressive sterilization.]

DR. J. W. LONG, Greensboro, N. C.: The Carrel-Dakin method is one of the very few good things that have come to us from the European war. I arose to say, first, that one cannot speak too enthusiastically of this method, and, second, it is as applicable in civilian practice as it is in military practice.

Some months ago I sent my first assistant, Dr. H. H. Ogburn, to study the method with Dr. Lloyd Noland, who had spent a number of months in the French army and who had studied it with Carrel himself at Compiegne. As a result we have since been using the method and with the greatest satisfaction.

Recently, just before adopting the Carrel-Dakin method, we had three cases of gas-bacillus infection occurring in patients with compound comminuted gunshot fracture of the thigh. We amputated in each instance. Two of the patients died. The third case, which occurred just as Dr. Ogburn returned, was treated by applying the Dakin solution to the stump after the Carrel method, and was saved.

A women, ten days after confinement, was brought in with a temperature of 105 F., pulse 140, delirious. The uterus was scraped out gently with a dull curet, the remnants of membrane removed; Carrel tubes were placed in the uterus and stitched into the cervix. The cervix was so rotten that it could not be held with a tenaculum. In forty-eight hours the temperature was normal and in a few days more the woman was practically well.

In a case of acute infectious gangrene of the genitalia in a man we slashed the parts freely (it was like cutting up a banana), then put him in a bath tub, my old plan of treating such cases by continuous bath. Unfortunately, the fever continued, while the sepsis was manifestly increasing. The patient was taken out of the bath, put into bed and Dakin

solution applied. He was on safe ground within forty-eight hours and made a good recovery.

In every case of acute appendicitis or peritonitis that we operate on we use this method. We put in ordinary drainage tubes also, because as yet I have not the courage to do without them and probably should not in all cases; also two to five or even eight Carrel tubes are introduced. About the second day the Dakin solution is begun.

We are more than pleased with the method, and I am glad to call the attention of the surgical section to the fact that it is just as applicable in civilian practice as in military surgery.

DR. R. W. CORWIN, Pueblo, Colo.: I wish to corroborate the statements made by Dr. Sherman. I was with Dr. Carrel at Compiegne for about four months last year, and what has been stated here today agrees with the work I saw in France. Since returning home we have used Dakin's solution and Carrel's method at Minniqua Hospital with splendid success and great satisfaction. The treatment is painless and the process of healing remarkably rapid.

DR. E. S. VAN DUYN, Syracuse, N. Y.: The greatest emphasis and insistence should be put on the importance and necessity of following exactly and implicitly each and every step of Dr. Carrel's technic. No man has a right to criticize the Carrel method from his own results unless they have been so obtained. The importance of each step in the Carrel method has been fully brought out. In this discussion I will use only the first step to illustrate my point, the necessity of exactly following his method, of understanding the underlying intent and of long practice in the technic. After studying Dr. Carrel's own work in his hospital at Compiegne and adopting his method in our hospital, we obtained with each new train of wounded quicker and better results as our ability and accuracy in the use of the method increased.

The first step in the method is the proper preparation of the wound. Heretofore we have been accustomed to follow two principles in the primary care of wounds: (1) to conserve all tissue possible; (2) to insure free drainage; the latter by dependent drains and counter openings. Both of these principles are diametrically opposed to those underlying the first step in the Carrel method. He prepares the wound (1) so as to hold the Dakin solution in constant contact with its entire surface, and (2) removes all tissue so traumatized that its vital resistance to bacterial invasion is lowered. For the first the incision should be above, so that the wound will act as a well, not below, and there should be no counter-opening, as this would defeat the purpose of retaining the Dakin solution, which must flush upward and overflow at the top. For the second, loosened pieces of tissue and torn muscle and skin tags, devitalized by bruising and lessened blood supply offer, if attempt is made to save them, as is so often done in an expectant method, little resistance to bacterial invasion and must be cut away broadly. The older the wound the more important is this. Such wounds fill quickly with new growths. Hard, binding and contracting cicatrices never result when Carrel's method is properly followed.

DR. WILLIAM O'NEILL SHERMAN, Pittsburgh: I do not wish to convey the idea that Dakin's solution is a panacea. Not at all. The success of the method is dependent on the thorough, open, wide dissection of the shell track and removal of all of the foreign material and devitalized tissue. It is necessary to spend two or three weeks in study and observation to master it. The criticisms and objections come from the people who have never seen it and know practically nothing about it. It is just as useful in civil practice. In every one of thirty cases of septic abortion the infection subsided. In twelve puerperal infections we have been able to reduce the bacterial count from 60 to 1 or below 1 to the microscopic field. There may be something much better in six months or a year, but to date it has saved life and ought to be adopted in the United States army and navy. I hope some action will be taken to train surgeons in this method.

As to the technic: The skin is cleansed with ether, following that with neutral sodium oleate soap; after that the skin is dried, then bandage gauze enmeshed with liquid petrolatum is placed along the edge of the wound so that the solution does not injure the skin. The debris is removed from the wound and the tubes inserted into the different parts of the wound and injected every two hours; the dressing is repeated every twenty-four hours. These wounds may be sponged and the sponge will not be blood-stained. The granulations are entirely different in gross appearance from any other granulations. As to the use of the solution in the free peritoneum, I am not prepared to give an opinion. My experience is a limited one in diffuse peritonitis and there is not enough information at hand to make any definite statements at this time. Empyemas and localized abscesses clean up very rapidly. If the infection can be reached with a Carrel tube, it is certain to subside. There are only a certain number of patients who have an idiosyncrasy to burning from Dakin's solution, and those who are burned complain more of the burn than of the wounds.

PERLECHE *

J. E. LANE, M.D.
NEW HAVEN, CONN.

My attention was attracted to perleche about two years ago, when I chanced to see a few cases in New Haven. In looking for literature of the disease I found brief descriptions of it in the larger textbooks of dermatology and of pediatrics, and the translation of a French article in a periodical,[1] but I was unable to find any first hand description of it in the English language. One American dermatologist, Cole[2] of Cleveland, published notes on a few cases in an article on eczema and pyodermatitis. These cases were seen at Jadassohn's clinic in Berne. So, in the literature that has come to my notice, there is no indication that the disease is found in this country. Most of the textbooks say that it is seen chiefly in France (Stelwagon, Pusey, Sutton).

I do not know whether the disease is a rare one here, whether it is rarely seen because it causes little inconvenience and physicians are not consulted for it, or whether no one has thought it worth while to describe it because it is of so little consequence.

In New Haven it is quite common, but this fact was discovered by looking for cases with the assistance of visiting nurses and nurses detailed for school inspection. In this way I saw forty or fifty cases in a year and a half. In this paper I shall attempt to give the main features of the disease as gathered from the literature and from my own observations, leaving the less important points for a more detailed paper.

Perleche first appeared in medical literature in 1885, when Lemaistre of Limoges published a careful clinical and bacteriologic study of some 300 cases. Although this was the first appearance of the disease in the literature, it is certain that it had then been known for a long time in some districts of France, for it had acquired several names in the Limousine patois. The same is true of Germany, as was shown by Epstein, who collected a considerable number of popular names for the disease. In Italy, according to Solaro, the disease was also well known, but had remained nameless up to the time of Lemaistre's study.

DESCRIPTION OF THE DISEASE

Although perleche is occasionally found in adults, it is preeminently a disease of infancy and childhood.

---

* Read before the Section on Dermatology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Buffalo Med. and Surg. Jour., 1886-1887.
2. Cole: Arch. f. Dermat. u. Syph., 1913.

It is an affection of the labial commissures, almost always bilateral, and usually rather closely limited to the commissures. As it progresses, the process extends for a varying distance toward the center of the lips, and usually extends a little on to the skin surface and on to the true mucous membrane of the inner side of the lips. At the beginning of the disease the epithelium is smooth and whitish, with a mother of pearl tinge. As it progresses the epithelium becomes macerated, a little thickened, and loses most of the mother of pearl color. Small transverse fissures appear, which show a red base, if the lips are stretched, but which do not reach the lower layers of the epidermis, and which do not bleed readily even if rubbed. In some cases there is slight erosion, but the surface is ordinarily not denuded. One well known textbook on the diseases of children describes perleche as a "form of ulceration" and adds that "the ulcer is of a grayish color, is quite painful, and is associated with considerable swelling of the lip." According to other authors and to my own observations, this is exactly what perleche is *not*. It is never an *ulceration* and there is no swelling of the lips connected with it. There is little or no inflammatory area around the lesions. Occasionally a little of the pellicle can be detached and more infrequently there is some hypertrophy. As the lesions begin to heal their appearance approaches that of the early lesions and after the roughness has disappeared there remains only a slight discoloration which persists for a month or so. No scars are left. If treated the disease is usually cured in two or three weeks. If left to itself there is usually spontaneous cure in a month or so unless there is reinfection, but in some cases it is of indefinite duration. In one case which I left untreated the whitish color was still visible at the end of a year.

In the mild cases of perleche there are no symptoms at all. In the fully developed cases there is a slight feeling of irritation which causes the child to continually run the tongue over the lesions. It is from this sign that the disease derives its name. There is never enough discomfort to cause the child to rub or pick the lesions. There are no other symptoms or physical signs. There is never more than the slightest local inflammatory reaction and the lymphatic glands are never enlarged. Impetigo, desquamation of the tongue and impetigenous stomatitis are sometimes associated with the disease, but in my cases there was no such association.

Lemaistre considered perleche to be caused by a streptococcus which he called the *Streptococcus plicatilis*. Several investigators following him considered the staphylococcus the causal agent. At present all agree with the most recent writers, Cole and Jadassohn, that the streptococcus is probably the causal agent, but that it can not be considered absolutely proved to be such, until we have succeeded in reproducing the disease in animals or human beings. Bartlett of Yale University kindly made cultures from twenty of my cases. Two or more varieties of bacteria were found in practically every case, but the streptococcus was the only one present in all cultures. This streptococcus in liquid mediums grew in long chains. On blood agar it produced a slightly greenish color, with little or no hemolysis. A few unsuccessful attempts were made to reproduce the disease in guinea-pigs with this organism.

Considering perleche a streptococcus infection, many observers classify it as a variety of impetigo. Clinically this appears to me to be hardly justified, because the two diseases are not more frequently associated than may be accounted for by coincidence. None of my own patients had impetigo though they were all in the class of patients in which that disease flourishes. In my cases of perleche that extended on to the skin surface, there was not the slightest resemblance to impetigo, and the cases of impetigo that I have seen at the angles of the mouth bear no resemblance to perleche. In fact, in my experience, impetigo usually stops at the edge of the skin, and does not extend on to the vermilion border of the lip. It would seem that if the diseases were identical, they would be frequently associated at the corners of the mouth, and that their appearance in this location would not be so entirely different. It may be, that while the streptococcus is an essential element in the causation of the disease, the association with it of some other bacteria is also essential, a condition of affairs somewhat similar to that found in Vincent's angina.

Auché studied the histopathology of one case of perleche and found cellular infiltration of the connective tissue of the papillae, dilatation of the blood and lymphatic vessels, thickening of the interpapillary plugs, enlarged intercellular spaces in the prickle cell layer with leukocytic infiltration, and, in the upper part of this layer, serofibrinous infiltration and some intercellular cavities filled with polymorphonuclear leukocytes. Some of the prickle cells were degenerated, opaque and without nuclei.

Perleche is highly contagious. Lemaistre found 312 of the 5,500 children in the primary schools of Limoges affected, a little over 5 per cent. Raymond describes two epidemics; in one, forty-two of the 155 children of one school were affected; in the other, twenty-five of the 245 children. I have seen five cases in one family, and two or three cases in several different families.

Common drinking utensils are the most frequent vehicles of transmission. Other ways in which it is spread are kissing and the use of common pencils, handkerchiefs and towels.

DIAGNOSIS, PROPHYLAXIS AND TREATMENT

The diseases mentioned as likely to be confused with perleche are herpes labialis, eczema, stomatitis and syphilis. No careful observer would confuse perleche with any of these diseases except syphilis. Perleche so greatly resembles the mucous patch or split papule that Fournier said that every practitioner who sees perleche for the first time never fails to take it for a mucous patch, and both he and Raymond asserted that the resemblance is so great that perleche is not to be differentiated objectively from the corresponding types of syphilis. However, this difficulty largely disappears if the mouth and the surface of the body are carefully examined, because secondary syphilis does not betray itself simply by mucous patches at the commissures.

My own observations are in accord with these statements. Nothing except syphilis could seriously be considered in making a differential diagnosis. A person acquainted with the disease would run little danger of confusing the mild cases with syphilis. In the more advanced cases it would have been impossible to make the diagnosis from the lesions alone, but in no case was there any doubt after a complete examination of the patient. In a larger series of cases it is likely that there would be some which could not be

settled in this way, but at the present time a doubtful case should be easily cleared up by the dark field or by the Wassermann reaction. If any doubt remained, brief treatment would settle the question.

What has already been said sufficiently indicates the prophylactic measures needed to stop the spread of the disease. The treatment is most simple. Prompt cure is effected by painting the lesions daily or every other day with a 10 per cent. solution of silver nitrate, a diluted tincture of iodin, and the copper sulphate of the alum pencil. Sabouraud recommends in addition an antiseptic mouth wash, but this is hardly needed in most cases. Auché found a 5 per cent. solution of chromic acid efficient in the few cases that resisted the milder treatments mentioned.

NOTE.—This paper was written some weeks ago, and the work on which the paper is based was finished before the beginning of this year. A few days ago, I saw in THE JOURNAL an abstract of a paper on perleche by A. L. Smith,[3] of Lincoln, Neb. I saw this abstract too late to consult the original paper, but the title indicates that 223 cases were studied, and I should judge from the abstract that my conclusions substantially agree with those drawn by Smith

ABSTRACT OF DISCUSSION

DR. HAROLD N. COLE, Cleveland: I believe that Dr. Montgomery of San Francisco has written something on perleche, and also the late Dr. Edward Cushing of Cleveland.

DR. WILLIAM A. PUSEY, Chicago: I think Dr. Lane has performed a service in calling our attention to perleche in the way he has. The name is an attractive, short and distinctive word to describe a condition which we have all seen for a long time. When I first read the accounts of perleche I was a good deal confused as to what the condition was. Later I saw a statement, by Sabouraud I think, that perleche is an impetigo at the corners of the mouth. Since then my conception of it has cleared, and I have thought of it as a pus infection at the corners of the mouth due to maceration and lack of care in dirty children, and that impression is confirmed by what we have heard from Dr. Lane. I think the name perleche is a good one to add to our dermatologic nomenclature to describe a distinct clinical picture.

DR. PHILIP KILROY, Springfield, Mass.: While it is true that perleche is only a localization of a streptococcus infection, or of impetigo contagiosa, it is an important one for the reason that it is mistaken frequently for secondary syphilis. Perleche is common. It is found in children as a complication of ordinary impetigo; and like retro-auricular intertrigo, or intertrigo under the breasts in women, is merely a localization of streptococcic infection. I believe the real cure to be copper sulphate. In the country districts, where we have to cure quickly, we cure impetigo in twenty-four hours. The lesions are thoroughly washed, and then, according to the age of the patient, from 0.5 to 1 per cent. solution of copper sulphate is applied; sometimes 1 to 2 per cent. of zinc sulphate is combined with the copper, but I doubt if the zinc helps any. The patient is told to apply the copper solution the first time thoroughly around the edges, between the epidermis and dermis, with a wooden toothpick or similar instrument, as Dr. Marrow applies his silver nitrate, and then to touch the lesions with the solution every hour or half hour for twenty-four hours. The only resulting unsightliness is a greenish crust; when this is washed off there remains a slight redness, but the impetigo is cured.

DR. GEORGE MANGHILL OLSON, Minneapolis: I have seen a number of cases of perleche in Minneapolis in nervous young girls who lick one corner of the mouth and then the other. Perleche is impetigo contagiosa brought on by this trauma in many of the cases.

DR. W. C. BROWNSON, Asheville, N. C.: I think Dr. Lane has given an admirable description of perleche, which will now be recognized as an American disease and not something exclusively French. It is not limited by any means to children, as we have been led to suppose. I have frequently seen it in adults. I saw a social worker on my way up who has had the trouble for two years. I attended him and thought he had been cured; his wife has not shown any signs of the trouble. Whether they indulge in the reprehensible habit of kissing on the mouth, I do not know. I have promised to cure him after he gets back home, but it is an unusually persistent case, evidently.

DR. JOHN E. LANE, New Haven, Conn.: Sabouraud calls perleche "impetigo commissural," and when I publish the subsequent paper I shall give a large number of other names that have been used. One of them is "angulus infectiosus oris." I do not wish to be understood as asserting that perleche and impetigo are different affections, as I think that question is not settled but that it will soon be settled. My reasons for not classing it as an impetigo at present are entirely clinical. Lemaistre, who had more experience with the disease than any other observer, never saw impetigo and perleche in the same person, and in hospital wards and schools he never saw perleche give rise to anything but perleche, and never saw impetigo cause perleche.

I am very much interested in Dr. Brownson's statement that perleche is common in the South, and in his statement that he sees it in adults. It has been described as occasionally seen in adults, but I have never seen a case.

As to treatment, the mouth wash recommended by Dr. Kilroy is perhaps wisely prescribed in all cases. Sabouraud also recommends it. Miller reports a number of cases in which he was compelled to use atropin to stop excessive salivation in order to effect a cure. In my own cases, cure has been prompt with the simple measures I described.

3. Smith, A. L.: Perlèche: Its Bacteriology, Symptoms and Treatment in Two Hundred and Twenty-Three Cases, Arch. Pediat., 1917, 34, 274; abstr., THE JOURNAL A. M. A., May 26, 1917, p. 1581.

INVESTIGATIONS AS TO FREQUENCY OF METASTATIC EYE INFECTIONS FROM PRIMARY DENTAL FOCI

PRELIMINARY REPORT *

JOSEPH M. LEVY, D.D.S.
NEW YORK
ASSISTED BY
WILLIAM F. C. STEINBUGLER, M.D.
BROOKLYN
AND
MARSHALL CARLETON PEASE, JR., M.D.
NEW YORK

It must be realized that ideal research conditions cannot be obtained in investigations such as we are reporting on, for the reason that the ailments for which the patients are presenting themselves are of such a nature that we did not feel justified in eliminating all routine treatment, owing to the danger of possible irreparable damage due to delay, should the dental foci not be the etiologic factor.

In the course of the past year, fifty-seven patients with various eye conditions were sent to the dental department of the Herman Knapp Memorial Eye Hospital for dental treatment. The diagnosis in these cases and the results obtained were as shown in the accompanying table.

The general impression which has hitherto obtained is that these metastases occur through the blood stream, but our observations have led us to the conclusion that this belief is not substantiated by the clinical evidence. With one exception, all the patients

* Read before the Section on Stomatology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

cured or materially benefited presented dental infection on the same side as the affected eye. If the belief that these metastases occurred through the blood stream was correct, we feel we should have observed more cases in which cure or material improvement occurred, when the dental infection was on the opposite side from the affected eye. Failing to have seen such cases, we have been led to the conclusion that these eye metastases, occurring from primary dental foci, travel through lymphatic channels. We have recently endeavored to demonstrate the correctness or fallacy of this belief by means of animal experimentation, but unfortunately, the number of experiments carried out so far are too few to arrive at any conclusion. Animals injected intravenously or through lymphatic channels have all died without presenting any eye lesion whatsoever. We have been using rabbits for this work, but as they are particularly susceptible to streptococcus infections and succumb very readily

DIAGNOSIS AND RESULTS IN FIFTY-SEVEN CASES

Diagnosis	Cases	Cured	Materially Improved	No Result
Chronic iridocyclitis	9	2	1	6
Acute iritis	7	1	4	2
Detachment of retina	5	..	..	5
Episcleritis	2	..	1	1
Choroiditis	10	1	2	7
Iridochoroiditis	2	..	..	2
Acute iridocyclitis	5	..	5	
Vesicular keratitis	1	1		
Keratoiritis	2	..	1	1
Postoperative iritis	3	1	1	1
Cyclitis	1	..	1	
Corneal ulcer	2	..	1	1
Retrobulbar neuritis	1	..	1	
Retinal hemorrhage	1	..	..	1
Chorioretinitis	1	..	1	
Interstitial keratitis (nonspecific)	1	..	1	
Neuroparalytic keratitis	1	..	..	1
Dendritic keratitis	2	1	1	
Sclerosing keratitis	1	1		
	57	8*	21†	28‡

* 14 per cent.; † 36.85 per cent.; ‡ 49 per cent.

thereto, we feel we shall have to secure animals less susceptible in order to carry on further investigation.

Believing it may be of interest, we will briefly outline a few typical cases:

CASE 1.—C. B., man, aged 34 years, Dispensary No. 15267, presented himself Feb. 2, 1916, with the history of blurred vision of the left eye for the past four days. He had had a similar condition a year previously and was treated at that time for choroiditis and glaucoma. On examination vision in right eye was $^{20}/_{20}$, left, $^{20}/_{30}$. Vitreous opacities and choroidal patch in lower temporal region of the left eye. Diagnosis, choroiditis. Urinalysis was negative, as was also the streptococcus complement fixation. An examination of the nose and sinuses excluded them as possible etiologic factors. Feb. 14, 1916, the upper right cuspid and second bicuspid were roentgenographed, disclosing an apical infection about the root of the cuspid. This tooth was extracted and a culture made from the root end and the curretings from the socket. Culture gave *Streptococcus viridans* as the predominating organism. Feb. 19, 1916, five days after the extraction of the cuspid, vision was $^{20}/_{20}$ and the eye was much clearer. It cleared up entirely in a short time and has remained so since.

CASE 2.—J. K., male, aged 24, Dispensary No. 23416, presented himself March 2, 1916, with a history of pain and inflammation in the left eye for one week. The patient gives the history of having had syphilis and gonorrhea recently. Has had considerable disturbance from one of the teeth in the upper left maxilla. Examination: Vision R. $^{20}/_{20}$, L. $^{20}/_{30}$; conjunctival and ciliary congestion. The left pupil reacts sluggishly and the iris is greenish in color. Internally, the eye shows congestion of the retinal veins. The Wassermann and gonococcus complement fixation were negative; the streptococcus complement fixation, weakly positive. On March 7, 1917, a roentgenogram of the upper left maxilla showed an apical infection about the roots of the upper left first molar. On the following day this tooth was extracted and a culture made. The culture showed a pure growth of staphylococci from which the vaccine was obtained. The extraction of this tooth was followed by a slight reaction, the eye becoming somewhat redder. On March 14, 1917, the eye was almost white. On the 21st, the fundus examination showed a diminution of the venous congestion. He received two doses of the autogenous vaccine before he left our care, March 26, at which time the eye was white and only slight venous engorgement remained.

CASE 3.—W. R., man, aged 51, Dispensary No. 21026, presented himself Oct. 27, 1916, with a history of redness of the upper lid of the left eye of one week's duration. Examination showed vesicles of forehead and upper lid. The eye was normal. The patient was given aluminum acetate to apply locally in the form of a wet dressing. On November 20, he again presented himself with a history of failing vision of the left eye for two weeks previously. Vision L. $^{20}/_{40}$; the cornea shows an opacity nasally and below and is anesthetic. B. P. 160. The Wassermann reaction was negative, the streptococcus fixation weakly positive. Examination of the teeth revealed a severe pyorrheal condition of the six lower incisors, the only teeth remaining. The extraction of these teeth was advised, but this the patient refused to have done. On November 24, his vision had fallen to $^{20}/_{100}$. On December 4, all the teeth were extracted; at this time the vision was $^{20}/_{200}$, and the cornea was hypesthetic. From now on, his condition gradually improved until on December 27 the cornea was no longer anesthetic and the eye was almost white. On January 12, the eye was white, the vision was $^{20}/_{40}$, and showed only a faint macula as the remnant of the inflammation.

CASE 4.—M. S., woman, aged 27, Dispensary No. 15743, previously presented herself Feb. 26, 1916, with a history of having had the grip two months prior to coming to the dispensary, following which the left eye became painful. She is married, has three children, has never aborted and is otherwise normal. Examination: Vision R. $^{20}/_{20}$, L. $^{20}/_{70}$. The right eye shows four nodules of episcleral and possibly scleral infiltration. They are situated above and temporally, over which areas there is slight congestion. In addition to these nodules there is a vertical band of superficial opacity about 2½ - 3 mm. wide, extending from the pupillary margin temporally almost to the center of the cornea, with a smaller band temporally. A roentgenographic examination of her teeth showed apical infection about the roots of the upper centrals and about the root of the lower right second bicuspid. The roots of the upper centrals were filled and the ends amputated and the lower right second bicuspid was extracted. Cultures were made in both instances. The culture from the root ends of the centrals showed the staphylococcus to be the predominating organism. *Streptococcus viridans* and the pneumococcus were present. The culture from the bicuspid socket gave *Streptococcus viridans* as the predominating organism. From this culture a vaccine was prepared. Patient received in all fifteen injections of the autogenous vaccine at intervals of seven to ten days. Following some of the injections there was a slight reaction in the form of backache, headache and an increase in the local redness. When this occurred the dose was diminished. In June, four months after her first visit to the clinic, her vision had increased to $^{20}/_{20}$ and the nodules were very much smaller. The nodules subsequently disappeared and the opacity became fainter.

CASE 5.—F. A., woman, aged 44, Hospital No. 19183, presented herself September, 1915, with a deep keratitis of the right eye for which the etiology could not be found. She gave a positive reaction with tuberculin but treatment with tuberculin did not improve her condition. Thyroid tablets were also given without result. She was treated in this manner until Dec. 12, 1915, when a roentgenographic examination of her teeth showed apical infection about the roots of the lower first molars, the upper left first and second biscuspids and the upper right cuspid and second bicuspid. On the following day the lower left first molar was extracted and on the fifth day following, the root of the upper right cuspid was filled

and the end amputated. A vaccine was prepared from a culture taken at the time of the root amputation. She was given this autogenous vaccine and her condition gradually improved. Two weeks following the root amputation, the eye was clear and the pain had completely subsided. When last seen in October, 1916, her vision was normal and there were only a few deposits remaining marking the site of the old infiltration.

Case 6.—W. J., man, aged 71, Hospital No. 19898, was operated on for a mature cataract of the left eye June 20, 1916. The second week the eye became inflamed. Patient had recurring attacks of iridocyclitis, sometimes with the development of hypopyon. The Wassermann and the streptococcus complement fixation were negative. On July 6, 1917, the upper left bicuspid (first) and upper left first molar were removed. This was followed by considerable local improvement. The patient subsequently had two more attacks of iridocyclitis. On August 21, a roentgenographic examination showed abscesses about the upper left second bicuspid, lower left first molar, upper right first and second bicuspids and upper right lateral. Later the lower left first molar was removed and a culture made from the socket gave a pure growth of *Streptococcus viridans*. Following the clearing up of these dental foci, the eye improved and no further iritis occurred.

Case 7.—J. S., man, aged 42, Hospital No. 20251, presented himself Nov. 3, 1916, with the history of having taken "cold" two to three weeks previously, following which the right eye became red and discharged pus. He continued at his work and did not consult a physician until the day before admission to the hospital. An examination of the secretion from the conjunctival sac was negative. A grayish infiltrate, irregular in outline, ran across the lower half of the cornea, somewhat dendritic in shape. The cornea was hypesthetic. The streptococcus complement fixation was negative. On Nov. 13, 1916, roentgenographic examination showed abscesses about the roots of the right central, lateral, cuspid, first bicuspid, first and third molars, also the upper left central. All these teeth were removed. Following the extraction, the patient made a rapid improvement and was discharged cured.

Case 8.—E. O'R., man, aged 22, Dispensary No. 22729, presented himself Jan. 29, 1917, with the history of an acute inflammation of the left eye of three days' duration. The history was negative, with the exception that the patient had had a severe cold just before applying for treatment. The patient admits having poor teeth. Examination gave vision R. $^{20}/_{100}$, L. $^{1}/_{200}$. Pupil narrow, anterior chamber filled with exudate. Urinalysis negative; Wassermann and gonococcus complement fixation negative; streptococcus complement fixation +. Patient did not improve under the usual treatment for acute iritis. A roentgenographic examination of his teeth revealed abscesses of upper left first bicuspid, first molar, lower left third molar, upper right first bicuspid and first molar. These teeth were extracted and there was an immediate improvement in the condition of the eye, the vitreous, however, still remaining hazy. At the time of discharge the patient's vision had increased to L. $^{20}/_{100}$ and the vitreous had cleared up considerably.

Case 9.—W. O'C., woman, aged 27, Dispensary No. 22024, presented herself Dec. 21, 1916, with the history of having had an attack similar to the present one, in both eyes, at the age of 13. For the last five months the left eye has been bothering her. She complains of poor vision, redness and photophobia. The family and the personal history are negative. Examination: Vision R. $^{20}/_{40}$, L. $^{20}/_{100}$. The left eye shows numerous opacities, eight or nine in all, of irregular size and shape in the substance of the cornea. Some of the patches are white, others grayish. The Wassermann reaction, urinalysis and examination of the nose proved to be negative. Patient was given 1 mg. of tuberculin T. O. but did not react. A roentgenographic examination of her teeth showed abscesses over the upper left lateral and first bicuspid, also about the lower left first molar, right first bicuspid and upper right third molar. On December 23 the roots of the lower left first molar were extracted and on the 26th the upper left lateral and first bicuspid, upper right second bicuspid and third molar were extracted. Patient's condition did not improve until some time later. Six weeks after extraction of the teeth the vision of the left eye was $^{20}/_{40}$ plus, and the cornea was decidedly clearer.

Case 10.—M. J., woman, aged 30, Dispensary No. 19480, presented herself Aug. 12, 1916, with the history of having had pain in the right eye for two weeks. Patient says she had a previous similar attack in 1903, at which time she was treated for eleven weeks. The Wassermann reaction was + + + +. Later the left eye became involved, and she was admitted to the hospital on Nov. 10, 1916. She did not improve under the routine treatment for cases of specific iridocyclitis, which treatment included mercurial inunctions and injections. On November 19, a roentgenographic examination of the teeth showed apical infections about the roots of the upper right lateral, second bicuspid, lower right third molar, upper left central, lateral first bicuspid, upper and lower left third molars. All these teeth were extracted, giving almost immediate relief from pain. The patient from then on made a rapid and uneventful recovery.

It will be noted that a fraction over 50 per cent. of the cases were either cured or benefited by dental treatment. It is not meant that the conclusion should be drawn that 50 per cent. of infectious eye conditions will be benefited or cured by dental treatment, but that when dental infection is present, coincidentally with an infectious eye condition, there is a strong probability that the dental foci may be a material etiologic factor.

We would again call attention to the fact that in all but one of the cases enumerated, dental infection has been on the same side with the affected eye.

Owing to the fact that the usual dental examination is of a very perfunctory nature, it is perhaps not out of place for us to warn the ophthalmologist to satisfy himself that a careful roentgenographic examination has been made of all suspected teeth before excluding them as a possible etiologic factor in infectious eye conditions.

28 West Eighty-Ninth Street, New York—94 Lenox Road, Brooklyn—155 East Sixty-Second Street, New York.

ABSTRACT OF DISCUSSION

Dr. Meyer L. Rhein, New York: I do not agree with Dr. Levy in regard to the deduction he makes from the complement fixation test. He says he places very little reliance on a small positive result. This is not at all in conformity with my own clinical experience with this test.

As mentioned elsewhere, up-to-date there have been over 150 strains isolated, and we do not know at present how much further these strains may go. Consequently a negative streptococcus fixation test does not necessarily prove that there is not a streptococcus infection by a strain that has not been used for comparison. I have been using the test extensively for a year and a half, and my own clinical deductions are that even a small positive test is of great diagnostic value. There is a great deal of uncertainty about it, but I do not think that it is fair to the test to draw the conclusions the essayist draws in his remarks. The one case he cites in which there was a negative test and in which staphylococci instead of streptococci were found, calls to our attention how frequently we may have this source of infection instead of the streptococcus, and of course if there is any great proportion of this form of infection, it presents an entirely different point of view relative to the complement fixation test and everything pertaining to it.

There is a strong possibility that both of these microorganisms may be found; that is, in certain cases either one may be the attacking organism. I think this is a valuable form that investigations should take, and while it is of value, I feel that the investigator attached too much importance to the negative result of the fixation test.

Dr. Morris I. Schamberg, New York: I am not connected with any eye institution and have not observed as many cases as Dr. Levy. I have had probably five cases in the last two

years, among which a most refractory recurrent iritis on the right side was directly attributable clinically to an infection on an upper left molar tooth, which might have escaped attention even with the help of the Roentgen ray if I had not used common sense in conjunction with it. There was nothing to suggest rarefaction at the apex, or any evidence of infection. A shadow in the picture showed a large filling which appeared to project into the pulp chamber, and I assumed it was pulpless. After applying the termal test I decided to remove the tooth to make a culture from it. After the removal of the tooth the eye cleared up, though it did not occur for some time.

Eye cases respond almost as rapidly without vaccine treatment as with it. In one recurring case vaccines were administered with very gratifying results. Another case of iritis in a woman aged 86 defied treatment by the ophthalmologists and did not respond in any sense until I looked into the mouth. Nothing in the roentgenogram indicated infection or deep seated pyorrhea. I noticed, however, that there was an offensive breath, and that the fold at the gingival border was rather deep. I used tincture of iodin and alcohol in equal parts, having the part sprayed three times a day, and had a nurse make applications to the eye, spraying forcibly into pockets a bland antiseptic, every half hour, and with that treatment the eye improved, though it had not responded until the mouth treatment was instituted.

I would sound a note of caution against the conclusion that the lymph channels are the means of transmission of infection to the eye. I believe the complement fixation tests and the blood cultures are just as uncertain as our findings in Wassermann examinations; in fact, I think more so. I feel that there is a great deal to be learned about these various tests, and I know that it is almost impossible, even though there are organisms circulating in the blood, for the average pathologist to recover them and grow them.

The same thing applies in connection with the test Dr. Levy proposed, the injection into the lymphatics. I am convinced that if autogenous vaccines are used in the blood stream, these antibodies formed will eventually reach the lymph channels, and if injected into the lymph channels they will reach the blood stream. I offer that as a suggestion.

DR. THOMAS L. GILMER, CHICAGO: I should like to ask a question. As a preface to this question I would say that those of us who have made a study of the bacteriology of alveolar abscesses and made animal inoculations, have used the vein of the ear to introduce the organisms. As a result we have found ulcers in some organs and hemorrhages in many parts. In our work at St. Luke's Hospital we found as a result of such inoculations 20 per cent. of hemorrhages in the periosteum of the jaw, and about the same in the joints. Does this not seem to indicate that the organisms go directly through the blood stream?

DR. JAMES H. KELSEY, ERIE, PA.: I should like to make just a few remarks in corroboration of Dr. Levy's paper, and to mention one or two personal experiences that I have had in connection with teeth and eye conditions. Dr. David N. Dennis, a well known oculist in Erie, and I have cooperated to some extent in the last year and a half, and I have been able to compile records on some fifteen to twenty cases of eye conditions that have been benefited by dental treatment. I have in mind a few patients who have definitely assured me of the connection between eye conditions and teeth conditions; in one case particularly, that of a young man about 18 years of age, who had a neuroretinitis, a rather bad case, a Wassermann test was found negative, the spinal fluid was taken, nose examined, the Roentgen ray showed the sinuses normal, and so on; everything possible had been done until he was referred for dental examination and diagnosis. We found an upper right first bicuspid showing a small granuloma. To hasten results, on account of the severity of the eye condition, this tooth was extracted. The eye cleared within a few days. The rest of his teeth were examined, and found apparently in good condition, but about three months afterward there was a recurrence of his eye trouble. Another thorough examination of his teeth disclosed a hidden cavity in the bicuspid on the opposite side from the one mentioned. The pulp was partially dead, and answered tests for both a vital and a nonvital condition. I extracted that tooth and the eye condition cleared up again within two or three days. Since then, as I understand, there has been no recurrence.

In my experience eye conditions have had more to do, perhaps, with the ten upper anterior teeth than with any of the other teeth in the mouth. Another case was of a right central incisor with an apical infection that held a gold crown. The crown was removed and the tooth drained; within a few days, the eye condition cleared. I left the tooth open, and later closed it up, thinking perhaps it was all right. I sealed it hermetically with cement, and within a day or two the same eye condition presented itself again. I removed that filling, drained it again and treated the tooth further, and in the last eighteen months there has been no recurrence.

In one case of eye trouble we found a pyorrhea pocket around an upper third molar and nothing else wrong. We made a vaccine from this pocket, extracted the tooth, curretted the socket and used this vaccine for some time, and with local eye treatment the condition cleared, but prior to that for some months the patient had considerable trouble, everything else possible having been done.

DR. G. V. I. BROWN, MILWAUKEE, WIS.: In this discussion it seems to me we are assuming that because there is iritis and an abscessed tooth, that *ipso facto,* the eye trouble must be the result of the infection. That does not follow at all. It may still come from the tooth, but it seems to me that the newer study of nerve conditions in that region supplies a very much more simple reason why my friend got a more direct result in the relief of his case than he could have expected from an infection, because he had a direct nerve relief. Later investigations show that there is a much more direct connection than has been thought between the ciliary ganglion and the fifth nerve, so that the tooth which was extracted might easily have supplied the cause and the correction; whereas no amount of investigation and no test, complement fixation or anything else, could have demonstrated that the iritis was the result of infection. I am not saying it was not, of course, but I do not think in this discussion we ought to ignore this newer study of nerve conditions and look fixedly on the side of infection all the time.

DR. JOSEPH M. LEVY, NEW YORK: I believe the last speaker might be justified if we were only discussing iritis, but I wish him to recall that we have other cases and other eye conditions which have responded to dental treatment. One thing I will say in substantiation of the statement made by the last speaker. No one, I believe, among all those investigating these metastic eye infections has ever been able to produce a bacteriologic culture from tissue taken from one of these eyes, and only once has anybody ever claimed to have produced an experimental iritis by animal inoculation.

Whenever I have drawn the conclusion that the eye condition may have been due to a primary dental infection and that there had been an infectious process in the eye, it was because I have had the authority of Dr. Knapp and his staff at the hospital that such was the case. I am not drawing conclusions as to whether an eye condition is or is not due to either nerve irritation or infection, because I believe it is just as foolish for me to make a diagnosis about the eyes as for the ophthalmologist to make a diagnosis about the teeth. If the ophthalmologist turns a case over to me as an infectious eye condition, I have to accept his diagnosis. Whether or not this answers Dr. Brown I do not know.

In reply to Dr. Rhein's statement about the species of streptococci, I want to say that some of these streptococcus complement fixations were performed, using as antigens streptococci obtained from cultures made from the teeth and sockets at the time of extraction, We cannot, presumably, get closer to the original organism we want for an antigen than using the one from the culture made at the time of extraction. Of course the conditions under which the cultures are produced are entirely different from those in the body, and there may be some difference in the organism itself when grown in culture than when grown in the body. If we take a culture from a tooth which we believe is producing an infectious condition elsewhere in the body and use it as an

antigen for complement fixation, and the fixation result is negative, and we get a positive cure or material improvement from the elimination of this tooth, I think we are justified in concluding that the primary focus was where we believed, and the complement fixation showed there was no demonstrable toxin in the blood due to this organism.

Now as to Dr. Schamberg's statement about a recurring case of iritis in which he used a vaccine. If he made a careful roentgenographic examination and eliminated the dental focus, where did he get his vaccine for this case? Did he use a stock vaccine?

DR. MORRIS I. SCHAMBERG, NEW YORK: I refer to the fact that a roentgenographic examination proved negative until I used common sense in conjunction with it and decided to remove a pulpless tooth from which we took a culture.

DR. JOSEPH M. LEVY, NEW YORK: As to animal inoculations, most of the men doing animal experimentation seldom use less than 3 to 5 c.c. of a twenty-four hour culture. Their bacteria will probably run up to 100 million to the cubic centimeter. Rosenow uses colossal quantities, 15 to 30 c.c. We do not get anything like this in the human being. What we get, or what we have been led to believe we get, is a slow, gradual but constant inoculation with the active virus from the original focus. What we are trying to produce in our animals is a similar condition. If we give massive inoculations our rabbits promptly go to postmortem. We are trying to produce these slow but constant injections, simulating the conditions we find in the human subject, and see what results will be obtained. We have had the usual results obtained by other experimentors as to cardiac, arthritic and other involvements, but to date we have been unable to produce an experimental infectious eye condition.

THE CRUCIAL TEST OF THERAPEUTIC EVIDENCE *

TORALD SOLLMANN, M.D.
CLEVELAND

According to the good old truism, the last and crucial proof of the pudding is in the eating thereof; and so, the last and crucial test of a therapeutic agent is its consumption by a patient. There is, however, one essential difference: When the pudding is eaten, with a sense of satisfaction, we know that it was a good, or at least an eatable pudding.

If the patient improves after taking a remedy, we do not yet know that he improved on account of the remedy. The *post hoc* type of reasoning or logic is not respectable; but it is all too apt to creep in unawares, unless one takes great precautions indeed.

Clinical evidence needs especially to be on its guard against this pitfall, for the conditions of disease never remain constant; nor is it possible to foresee with certainty the direction which they are going to take. It is just this point which makes the clinical evidence so much more difficult to interpret than laboratory evidence, in which the conditions can be more or less exactly controlled, and any changes foreseen. It is on this account, also, that clinical experiments must be surrounded with extra painstaking precautions.

In brief, while the "proof" of a remedy is on the patient, that is not the whole story, but merely an introduction. The real problem is to establish the causative connection between the remedy and the events. The imperfect realization of this has blocked therapeutic advance, has disgusted critical men to the point of therapeutic nihilism, and has fertilized the ground for the commercial exploitation of drugs that are of doubtful value or worse.

This has been impressed on me particularly by my service on the Council on Pharmacy and Chemistry. In the course of its work of passing on the claims advanced for commercial remedies, this council is forced to inquire critically into the basis of the claims of manufacturers.

It is interesting to note the qualitative differences in the evidence for the various kinds of claims: The chemical data are usually presented in such a form that it is possible to tell at a glance whether or not they are based on demonstrated facts, which could usually be verified or refuted without special difficulty. The deductions are usually such as can be legitimately drawn from the data, or else they are obviously absurd. All this agrees with the relatively exact status of chemical science.

In passing to data and deductions from animal experiments, a distinct change is noticeable: Not only are the data less reliable, and less worthy of confidence, but they are more often stated in a less straightforward manner. The presentation of the data often shows evidence of manipulations of the results, so as to make them most favorable to a preconceived conclusion that would recommend the drug. This is not always intentional, but is partly due to the less exact nature of animal experimentation, which leaves a wider play to the arbitrary interpretation of the reporter. A certain amount of this is unavoidable. No serious objection can be raised, provided the experimenter presents all the essential data, and discusses fairly all of the interpretations that would apply to them.

On the whole, it is usually possible to form a fairly definite estimate of the value of experimental data.

When one comes to the clinical evidence, an entirely different atmosphere obtains. When the Council demands evidence of the usefulness of a remedy, the manufacturers generally respond with every sign of enthusiasm. They may have ready a series of articles already published, or they instruct their agents to bring in letters from physicians. The last method seems to meet the most cordial response, judging from the deluge of letters and opinions that floods the Council.

The quality of the published papers is a fair reflection of the deficiencies of what is still the common type of clinical evidence. A little thought suffices to show that the greater part cannot be taken as serious evidence at all. Some of the data are merely impressions — usually the latest impressions of an impressionable enthusiast — the type of man who does not consider it necessary to present evidence for his own opinions; the type of man who does not even realize that scientific conclusions must be based on objective phenomena.

Some of the papers masquerade as "clinical reports," sometimes with a splendid disregard for all details that could enable one to judge of their value and bearing, sometimes with the most tedious presentation of all sorts of routine observations that have no relation to the problem.

The majority of reports obtained by the agents belong to these classes, notwithstanding the fact that they are often written for the special use of the Council, and therefore with the realization that they are likely to be subjected to a thorough examination, and therefore presumably representing the best type of work of which the reporter is capable. So, at least, one would suppose.

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

It is also possible, however, that some of these reports are written merely out of thoughtlessness, or perhaps often to get rid of an importunate agent. This is illustrated by the following correspondence, taken literally from the files of the Council.

A letter from a prominent physician "A," endorsing a certain preparation "D," having been submitted to the Council, the secretary was directed to write to Dr. A as follows:

Dear Dr. A:—The B Company of C has requested the Council on Pharmacy and Chemistry to admit its preparation D to New and Nonofficial Remedies. As part evidence for the value of the preparation, the company submitted a letter from you which contains the following:

> So far as my experience has thus far gone, they are certainly superior to a number of other iodine compounds now on the market, and I should judge that they ought to take a superior place in therapy involving the use of iodine.

The referee of the Council in charge of D writes that he was interested by your letter and asks that I inquire: As compared with sodium or potassium iodid, what would you say are the differences between, and real advantages of, D and the alkaline iodids? Did you make any comparative experiments and keep a record of them? If so, the referee would like to receive an account of your trials. In what direction could D be expected to occupy a superior place in iodin therapy?

I hope that you can give the information asked by the referee and thus aid the Council in arriving at a correct estimate regarding the value of D.

The following reply was received from the physician in response to the foregoing:

Dear Professor Puckner:—In reply to yours of January 19, I did not proceed far enough in the investigation of D to draw conclusions of any particular value for the purpose of the Council on Pharmacy and Chemistry; and I so stated in my letter to the proprietors of that remedy.

Answers to the questions you put in your letter require an amount of investigation of the remedy far beyond anything I undertook. As a matter of fact, I returned about five sixths of the capsules sent me, because of lack of time and opportunity to carry out the extensive clinical experiments that I plainly saw would be required to give an opinion at all worth while. I believe you had better not consider me in the matter at all.

The report was furnished by a physician for whom I have a high personal regard. I introduce it here, not so much in a spirit of criticism, but as a justification of the opinion that I have formed of clinical evidence obtained by manufacturers through their clinical adjutors.

When commercial firms claim to base their conclusions on clinical reports, the profession has a right to expect that these reports should be submitted to competent and independent review. When such reports are kept secret, it is impossible for any one to decide what proportion of them are trustworthy, and what proportion thoughtless, incompetent or accommodating. However, if this were done it is quite possible that such firms would find much more difficulty in obtaining the reports. Those who collaborate should realize frankly that under present conditions they are collaborating, not so much in determining the scientific value, but rather in establishing the commercial value of the article.

Often the best type of clinical reports — those in which the observations are directed to the significant events and not to mere side lines, and in which the significant events are correctly and adequately reported — generally lack one important essential, namely, an adequate control of the natural course of the disease. Since this cannot be controlled directly, it must be compensated indirectly, For this purpose, there are available two methods:

The first is the statistical method in which alternate patients receive or do not receive the treatment. This method can usually only be of value when a very large series of patients is available. Even then, its value is limited or doubtful, because it cannot take sufficient account of the individuality of cases.

The second method consists in the attempt to distinguish unknown preparations by their effects — the method that might be called the "comparative method" or the "blind test."

In this, the patient, or a series of patients, is given the preparation which is to be tested, and another preparation which is inactive, and the observer aims to distinguish the two preparations from their effects on the patient. Surely if the drug has any actions at all, it will be possible to select correctly in a decided majority of the administrations.

The same principle can be applied in distinguishing the superiority of one preparation over another. In this case, the two preparations would be given alternately to different patients, and the observer would try to distinguish them by their effects. Here again, if one drug is really superior or otherwise different from another, to a practically important extent, the observer will surely be able to make the distinction.

This method is really the only one that avoids the pitfalls of clinical observation; it is the only method that makes the results purely objective, really independent of the bias of the observer and the patient. It is the only method, therefore, which determines whether it was really the pudding that was eaten and not some other dessert.

In principle this method does not usually offer any very great difficulties. It is, of course, necessary that the two preparations to be compared shall resemble each other so closely or shall be flavored, etc., so that they cannot be distinguished by their physical properties. This is usually not a very difficult matter. The method does not jeopardize the interests of the patient, for it is understood that no drug would be tested in this way unless there is some reason to believe that it has a value. When the patient's condition is such as to demand treatment, then he would be receiving either the standard drug or the drug which the experimenter believes may be superior to the standard.

CONCLUSIONS

The final and crucial test of a remedy is on the patient; but the test must be framed so as to make it really crucial. Most clinical therapeutic evidence falls far short of this. The "blind test" is urged to meet the deficiencies.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ACETYLSALICYLIC ACID (See N. N. R., 1917, p. 265).

Acetylsalicylic Acid, M. C. W.—A non-proprietary brand complying with the standards for acetylsalicylic acid.

Mallinckrodt Chemical Works, St. Louis, Mo.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

Contributors, subscribers and readers will find important information on the second advertising page following the reading matter

SATURDAY, JULY 21, 1917

THE PHYSIOLOGIC VALUE OF THE NITROGENOUS COMPONENTS OF THE POTATO

There is a widely persistent belief that protein ingested in the form of vegetable products is far less readily utilized by the human organism than are the albuminous substances of animal origin, such as are commonly consumed in flesh, fish, fowl, milk and eggs. The claim of comparatively low digestibility made against the protein of vegetable products has, indeed, furnished one of the arguments used to combat the vegetarian propaganda. In part, the statements regarding the poorer utilization of the nitrogen consumed in the form of some of the foods derived from plants are justified. Numerous experiments have demonstrated that the figures for the availability of the nitrogenous components of most common legumes and many of the coarser cereals are conspicuously lower than those for the usual mixed diet of man in which food products of animal origin enter quite largely. Atwater and Bryant[1] gathered the following data:

Character of Diet	Protein Utilized, Per Cent.
Animal foods	97
Cereals	85
Legumes, dried	78
Vegetables	83
Fruits	85
Vegetable foods	84
Total foods	92

There are numerous factors which might account for a poorer utilization of nutrients from certain vegetable foods. The low nitrogen content of most vegetable foods necessitates the ingestion of a relatively large volume. This generally increased bulk of vegetable food may of itself lead to more rapid evacuation and lessen the possibilities of digestion and absorption. Again, in comparison with products of animal origin, the vegetable foods may present an unfavorable texture. In older plants, the cell walls may be quite tough and even supplemented with lignin. There is evidence that cellulose is not digested to any considerable extent by the higher animals, and the vegetable membranes are not always easily permeable to the digestive juices. It is of primary importance for digestion that the plant cells should be thoroughly disintegrated. Mechanical factors also may influence the rate of passage through the alimentary canal. This applies to coarse particles, such as are derived from seed coats in bran.

It cannot be argued from the foregoing that the vegetable proteins by themselves necessarily exhibit any inherent resistance to digestion and utilization in man. Several years ago, Mendel and Fine[2] showed that the two characteristic proteins of wheat, gliadin and glutenin, are as thoroughly digested and as completely absorbed as the nitrogenous components of fresh meat. The same is probably true of the barley proteins, and in somewhat lesser degree of corn proteins. No such favorable report is available for the isolated proteins of the white bean and the common pea.

What has just been said necessarily leads to the conclusion that each food product ought to be tested on its own merits before any final pronouncement as to its availability is made. This is further emphasized from a different standpoint by the newer knowledge of the physiology of the amino-acids. A protein may be highly digestible and its digestion products readily absorbed into the blood stream; yet such a protein may be of inferior biologic value because of its failure to yield all of the amino-acids requisite for the nutritive functions in tissue growth or repair. The test must be furnished by a physiologic experiment rather than a mere chemical analysis.

An answer is now at hand with respect to the value of the potato from this standpoint. Its richness in starch has long been recognized, and has led to the inclusion of the potato primarily in the group of carbohydrate foods. Hindhede[3] of Copenhagen called attention not long ago to the apparently excellent digestibility and physiologic value of the nitrogenous components as well. His trials on men were of sufficiently long duration — weeks rather than days — to give unusual significance to the data. Even when potatoes and margarin furnished the sole ingredients of the ration, a satisfactory nitrogen balance could be maintained.

This is astonishing in view of the low nitrogenous content of potatoes. The general result has just been corroborated, however, by Rose and Cooper[4] at the Department of Nutrition in the Teachers College, Columbia University. On a diet adequate in total

1. Atwater and Bryant: Report, Storrs Agricultural Experiment Station, 1899, p. 86.

2. Mendel, L. B., and Fine, M. S.: Studies in Nutrition, I, The Utilization of the Proteins of Wheat, Jour. Biol. Chem., 1911, **10**, 303; II, The Utilization of the Proteins of Barley, ibid., p. 339; III, The Utilization of the Proteins of Corn, ibid., p. 345; IV, The Utilization of the Proteins of the Legumes, ibid., p. 433; V, The Utilization of the Proteins of Cotton Seed, ibid., 1912, **11**, 1; VI, The Utilization of the Proteins of Extractive-Free Meat Powder; and the Origin of Fecal Nitrogen, ibid., p. 5.

3. Hindhede, M.: Untersuchungen über die Verdaulichkeit der Kartoffeln, Ztschr. f. physikal. u. diätet. Therap., 1912, **16**.

4. Rose, Mary S., and Cooper, Lenna F.: The Biological Efficiency of Potato Nitrogen, Jour. Biol. Chem., 1917, **30**, 201.

fuel, consisting of potatoes and clarified butter, in which the potatoes supplied all but 0.1 per cent. of the total nitrogen, nitrogen balance was maintained for seven days on a total nitrogen intake of 0.096 gm. per kilogram, equivalent to a net intake of 0.068 gm. per kilogram. This is in harmony with other experiments in which nitrogen equilibrium has been maintained on potato nitrogen when the net available supply was from 0.04 to 0.08 gm. per kilogram, and demonstrates that the potato is a source of nitrogen compounds of high nutritive efficiency in spite of the fact that only 63 per cent. of the potato nitrogen is reported to be in the form of protein.

During the war-time shortage of food, the potato has achieved unusual prominence both in Europe and America. It has been lauded as a valuable source of carbohydrate in palatable abundance. Its base-yielding inorganic components have been pointed out as having a useful function in maintaining the acid base equilibrium of the body,[5] and now the climax may be capped by a most favorable report on the high biologic value of the nitrogenous components of a food that has rarely been regarded as having any significance whatever from this standpoint. The promised bumper crop of potatoes for this autumn may thus be thrice welcome.

DANGERS FROM THE EXPLOSION OF CARBONACEOUS DUSTS

Although it is now widely recognized that coal dust is explosive, the fact that other carbonaceous dusts also are easily ignited and capable of explosion is not so well known. An expert of the Bureau of Chemistry[6] in Washington has noted that while most of the dust explosions reported in surface plants occur in mills and elevators handling wheat, oats, corn and their products, it appears that no mill handling carbonaceous material is immune from the possibility of an explosion. The list of known explosions in other kinds of mills includes those handling dextrin, sugar, starch, malt, wood, linseed meal, cottonseed meal, paper, cork, fertilizer, sulphur, cocoa, and spice dusts.

There is a pronounced similarity between the explosion caused by gas and that caused by dust. A flame attains a high velocity in certain gas mixtures in which the oxygen is intimately mixed with the gas molecules. In the case of dusts, the heat of combustion of one particle cannot be transmitted so readily to the next particle as it can in a mixture of gases in the molecular condition. The velocity attained in dust explosions depends on the size of the particles concerned. In addition to the fineness of the dust, its inflammability and the amount in suspension are determining factors.

The importance of obtaining a more thorough knowledge of the genesis and prevention of dust explosions is brought forcibly to our attention by the fact that in a single explosion in an American feed grinding plant, thirty-three men lost their lives, and over seventy were injured. This explosion, which occurred during the ordinary process of operation, completely destroyed the milling plant and considerably damaged surrounding property. The government laboratories which have recently initiated a study of the problems of the inflammability of carbonaceous dusts found that among more than fifty tested varieties that may have a commercial or industrial significance, all had a high degree of inflammability. A dangerous condition apparently exists when a cloud of any of them is in suspension, or in a position in which it can be easily thrown into suspension in the air.

Brown and Clement[7] have summarized the problem by saying that if dust could be entirely confined within the machinery of a mill in which combustible dust is produced, and a method could be found for preventing explosions in these machines, a long step would be taken in the prevention of dust explosions in mills. To keep a dust cloud from forming in the machines appears to be almost, if not utterly, impossible. It is possible, however, by proper cleaning to remove foreign material from the grain and thus lessen the possibility of a spark which might ignite the dust being formed in the machine.

Sources of heat, nevertheless, cannot be entirely guarded against, especially when both mechanical imperfection and human negligence come into play. It seems desirable, therefore, to circumvent this ever present danger by some device which will prevent the possibility of an explosion even when the heat factor is present. This has led to the consideration of the use of inert gases. Carbon dioxid at once suggests itself. The government chemists state that the most likely source of such inert gases around a mill is flue gases. These contain 79 per cent. of nitrogen, the other 21 per cent. being composed of varying amounts of oxygen and carbon dioxid. Under normally working conditions, the oxygen content is about 11 per cent. Small amounts of carbon monoxid, usually under 1 per cent., are often present, especially when the oxygen content is low. For use in enclosed machines, the carbon dioxid content would not necessarily have to be as low as in a mine or as in an atmosphere in which men are working, and hence it would not have to be removed from flue gases before they could be used in the grinding systems of mills.[7]

Laboratory tests recently reported by Brown and Clement[7] indicate that an explosion of grain dust cannot be initiated in a gas mixture containing 12 per cent. or less of oxygen, the remainder being inert

5. Compare Blatherwick, N. R.: The Specific Rôle of Foods in Relation to the Composition of the Urine, Arch. Int. Med., September, 1914, p. 409.

6. Brown, H. H.: Inflammability of Carbonaceous Dusts, Jour. Indust. and Engin. Chem., 1917, **9**, 269.

7. Brown, H. H., and Clement, J. K.: Inflammability of Carbonaceous Dusts in Atmospheres of Low Oxygen Content, Jour. Indust. and Engin. Chem., 1917, **9**, 347.

gases. This limit could be extended to 14 or 14.5 per cent. of oxygen if elevator dusts alone are considered. These studies need to be extended on a large scale where the actual preventive efficiency of inert gas mixtures containing 12 per cent. or lower of oxygen in preventing a dust explosion from starting or propagating can be tested under the conditions of industrial practice. From the standpoint of vocational hygiene, the tentative conclusions of the government investigators are highly significant. The new researches suggest, they say, that the maintaining of an atmosphere of inert gases in all systems of grinding or handling carbonaceous materials which form dangerous dusts would be an effective means of preventing many dust explosions; for even though an ordinarily dangerous amount of dust may be present and a spark or other source of heat may be formed, the dust would not be ignited or an explosion propagated because the oxygen content of the atmosphere would be too low to support combustion. Here is a promise, at least, of an ultimately successful plan in combating a recognized menace to human life.

FUNCTIONAL CARDIAC DISORDERS IN SOLDIERS

The report of Dr. Thomas Lewis and his associates of the Hampstead Military Hospital[1] should be read by every American physician who expects to take part in the care of our own troops. The report deals with a syndrome which was first described during the Civil War by Da Costa as the "irritable heart of soldiers." The symptoms are not unknown in civil life, and patients suffering with similar disorders are familiar to every physician. Under the stress of war, however, these disorders become so much more numerous as to constitute a medical problem of real importance. It is altogether probable that the majority of the patients carry into their military careers the underlying factors for the development of the symptoms, and that the rôle of war is a provocative, rather than an actually causative, one; in other words, if these men had continued to live their normal lives, free from unusual physical and mental strain, and less subject to infections, they would probably never have developed the affection. From the standpoint of throwing light on the etiology and pathology of the syndrome, Dr. Lewis' report is disappointing. Its conclusions are for the most part negative, yet some of these negative results are of great importance.

Foremost of all is the proof that these patients are not suffering from dilatation of the heart. The term "cardiac strain" is therefore not properly applicable to them. No proof has been obtained that structural disease of the myocardium exists in these patients. Infection has been shown to play an important rôle in the production of the symptoms. From this an important practical conclusion has been drawn. Soldiers suffering from even mild infections should not be returned to the front until their cardiovascular efficiency has been proved to be normal. In many cases this would require a short period of retraining. The adoption of such a measure would probably prevent many cases. Infection is the only etiologic factor which occupies at all a prominent place, and in the treatment of the condition, the removal of foci of infection has sometimes been followed by very rapid improvement. The bulk of the patients have been recruited from the sedentary classes. This gives the report an especial significance for the United States at this time, when the operation of the selective draft will call to military duty many men unaccustomed to strenuous physical effort, and of a type unfamiliar in the past to the officers of our army. It is highly important for their efficiency as soldiers, as well as for their individual safety and comfort, that their training should be carried on more cautiously and slowly than has been necessary with the usually vigorous voluntary recruit of our present army. The fundamental importance of the report, however, is its demonstration of what may be accomplished by proper treatment.

The British experience has shown conclusively that the ordinary treatment of such patients along the lines familiar for cardiac disease leads to inevitable failure. Rest in bed and digitalis are not only useless, but even harmful, by confirming the patient in his belief that he has permanent heart disease. Treatment by exercise, graduated to the patient's ability and increased week by week, is of great efficacy. At the Hampstead Hospital it has succeeded in removing symptoms, and returning to some military service, almost 50 per cent. of the men who did not have chronic cardiac defects, and one-half of these returned to full duty. That graduated exercise is useful in such patients has been known to physicians in the past. The Oertel treatment was based on the retraining of a damaged myocardium. The men who have been successful in the treatment of neurasthenics with cardiac symptoms have found exercise invaluable. Dr. Lewis' demonstration, however, coupled as it is with the most rigorous objective study of the cases, affords proof on a scale hitherto unknown. Furthermore, he has contributed to the efficiency of the army by reducing the average stay in hospital of these patients from five and a half months under the former methods to two months under exercise.

It is to be hoped that the medical department of the United States Army will be able to achieve equally satisfactory results in this type of military disability, the first description of which is to be found in the great medical and surgical history of our own Civil War.

1 See abstract, this issue, page 231.

LAUNDRY SANITATION

The hygienic problems of the modern laundry have at least a twofold aspect: one concerns the health of the employees engaged in the work; the other relates to the part which the methods and materials of the business may play in the transmission of disease among its patrons. It has been stated that in a number of instances typhoid fever and cholera were conveyed to washerwomen, apparently through infected bed and body linen.[1] Nowadays even the markers and listers who handle the dirty clothes consider their work fairly free from the risk of infectious diseases. The one thing which the workers fear and guard against is body lice.

A sanitary study, including bacteriologic tests, of laundries and the public health was recently undertaken in the Bureau of Laboratories of the New York City Department of Health.[2] It was demonstrated that the methods now employed in large cities in laundering clothes have varying degrees of efficacy in destroying pathogenic bacteria and thus preventing the spread of disease. As a rule, clothing washed in homes receives a good deal of care, so that the danger from infected linen under ordinary conditions is negligible. When the laundry is cared for in the homes of laundresses, the standards set by the individual vary. Owing to the close quarters in which the laundresses live, there is a possibility of a reinfection of the clean linen, if communicable diseases are present among the members of the family of the laundress.

The sanitary conditions existing in what is now familiarly known as the "hand laundry" were in general of low grade. In fact, the expression "hand laundry," as understood by the general public, is a misnomer, since practically the only work done by hand is the receiving, marking, some ironing, and distributing. The New York investigators point out that little washing is done in the average hand laundry. The practice now prevails of tightly packing a heterogeneous collection of soiled clothes into large bags or nets. These nets are then sent to the steam laundries, where they are washed as units and returned to the hand laundries wet. The drying facilities employed in the hand laundries are limited and of primitive type. The process is not such as would secure the death of all the pathogenic germs which may have survived the washing process.

In principle, the steam laundry contains all the facilities for a satisfactory sanitary treatment of dirty textiles. Wet clothes infected with bacteria and subjected to the action of the usual degree of heat found in drying houses, tumblers, mangles and hot presses are freed from living organisms. It is stated, however, that the practice of "net washing" as now done in steam laundries is insanitary. The miscellaneous character of the contents of the nets prevents the proper application of disinfectants, soap, water and heat, and thus permits the survival of vermin and pathogenic organisms. The size of the nets and the methods of tight packing employed prevent the penetration of water and heat in the allotted time.

Added defects are also reported with respect to the distribution of laundry articles in the current procedures. The methods employed by steam laundries in the collection and delivery of clothes are found to be defective in a considerable proportion of the laundries. Soiled and clean clothes are carried on the same wagon and come into direct contact. They are also frequently sorted in close proximity, as comparatively few establishments maintain separate receiving rooms in which the clothes may be properly handled. The absence of proper sorting rooms for the clean linen in the average steam laundry and the consequent contact with soiled linen may result in a possible reinfection of the clean clothes.

The New York report states that in the majority of steam laundries the clothes are washed under conditions prejudicial to the health of the employees, the "washers" being usually located in basements poorly lighted and ventilated, with defective floors, and without adequate provisions for the disposal of waste water and steam. Labor-saving machinery, slatted floors, exhaust fans for the removal of steam, and reasonable working hours are some of the measures which will improve the vocational aspects of the industry.

1. Kober and Hanson: Diseases of Occupational and Vocational Hygiene, p. 664.
2. Schroeder, M. C., and Southerland, S. G.: Laundries and Public Health, Pub. Health Rep., 1917, **32**, 225.

Current Comment

SUGGESTION FOR TREATMENT OF SURGICAL SHOCK

Cannon[1] describes surgical shock as a syndrome with rapid, thready pulse; subnormal temperature; shallow, rapid respiration with an occasional long drawn sigh; pallor; thirst; cold clammy skin; dilated pupils reacting slowly to light; diminished response to sensory stimuli; muscular weakness; diminished reflexes, and apathy. In this complex what phenomena are fundamental and what incidental? These phenomena, he points out, may be classified into four main groups, namely, disturbances of sensation, of motion, of respiration and of circulation, and all or nearly all may be explained by diminution of the volume of blood in circulation. In support of this statement; Cannon cites the parallel between shock and the condition resulting from severe hemorrhage, and also a number of physiologic considerations, notably that low blood pressure causes an increase in sympathetic resistance so that stronger stimuli are required to evoke motor response, and that the activity of contracting muscle is diminished under low systolic pressure, whence results a tendency to lower

1. Cannon, W. B.: The Physiological Factors Concerned in Surgical Shock, Boston Med. and Surg. Jour., 1917, **176**, 859.

bodily temperature. Respiratory disturbances may be secondary also to such derangement of circulation as hyperirritability of the medullary center develops from increase of acid metabolic products and diminished oxygen supply. Clearly pallor, small thready pulse, and cold clammy skin are explainable on the basis of circulatory disturbances. We see, then, that viewed in this light, three factors must be considered in any effort to get closer to the nature of shock, namely, the heart, the vasomotor mechanism, and the volume of blood. As the nervous control of the heart is not impaired, Cannon ascribes the relaxation of the heart to low blood pressure and increased hydrogen ion concentration in the blood. He emphasizes that the vasomotor mechanism, contrary to common belief, is not depressed in shock, as the vessels in reality are in a state of tonic contraction. The changes in the nerve cells often given as a cause of shock are results which are found also after severe hemorrhages. These statements will serve to indicate how Cannon reaches the conclusion that the keystone in the problem of shock is the diminished volume of blood in circulation due to stagnation in the portal area. Accumulation of a large amount of blood in the splanchnic area is favored, on the one hand, by relaxation of its capillary vessels due to increased acidity of the stagnant blood and, on the other, by resistance to the outflow through the portal branches in the liver by the activity of the vasomotor centers. The splanchnic blood lies trapped, so to speak, between the contracted portal venules of the liver and the arterioles of the stomach, intestine, pancreas and spleen, necessitating a high general pressure to overcome the resistance. The vasomotor center, when deprived of blood, causes constriction of the vessels in an attempt to raise blood pressure; but in so doing the vessels of the liver naturally share in the general constriction, and there is developed a vicious circle which results in continued accumulation of blood in the portal area and reduction of blood in the general circulation. The point of attack in the treatment of shock, if one adopts this conception, must be relief of the splanchnic condition. For this purpose Cannon suggests the use of pituitary solution intra-abdominally because of its action on smooth muscle. Introduced into the abdominal cavity, it would cause contraction of the smooth muscle of the intestine, thus exerting pressure on the smaller mesenteric veins at the same time as the muscle of the larger veins would be acted on directly. The usual treatment does not restore the splanchnic blood to the circulation; salt solution soon passes into the tissue spaces, epinephrin constricts the splanchnic arterioles, thus defeating the object, and pressure on the abdomen causes equal pressure on the portal vessels. Whether or not pituitary solution will act as indicated remains to be seen, and the results of the practical tests Cannon proposes to make will be awaited with much interest. To repeat, the problem as he sees it is to return the stagnant blood to the circulation, in order to give the heart and blood their proper nourishment; and to accomplish this, he suggests a treatment that is calculated to drive the idle blood back into the general current.

ANOTHER NOSTRUM FALLACY

One of the stock arguments of the "patent medicine" makers—and their stock is large—is the claim that any preparation that has been on the market for a number of years must, by that very token, be of value. No one knows better the falsity of this claim than the nostrum maker, unless it is the advertising man. If, without any advertising, a medicinal preparation continued in public favor for many years, there might be some justification for assuming that the product either had merit, or contained certain drugs that might explain its continued popularity. Yet even this would not be indisputable evidence, because the nostrum always gets credit for that large proportion of recoveries that are wholly the result of *vis medicatrix naturæ*. The most worthless and fraudulent proprietary medicines will, and do flourish just so long as they are advertised. Some of the biggest medical swindles known have brought to their exploiters increasingly large fortunes until Nemesis arrived and put them out of business or until the advertising ceased. The "Sargol" fraud was, during the last year of its existence, bringing in more money to the men exploiting it than it had ever done and, if widely advertised, would unquestionably have continued to do so had not the federal authorities put it out of business. The "Oxydonor" swindle was a goldmine to Moses up until the time he was sent to the federal penitentiary for selling it. The same can be said of Samuel's outrageous piece of imposture whereby he made a fortune selling a weak solution of sugar and salt in hydrant water as a cure for all the ills of the flesh. If the proprietary medicine business proves anything it proves beyond cavil the fact that you can fool some of the people — and some of the doctors — all the time, if you advertise!

TUMORS OF THE BLADDER IN ANILIN WORKERS

Long exposure to anilin appears to result sometimes in the development of tumors of the bladder, with or without the symptoms of chronic anilinism. With the growth of the anilin dye industry and the manufacture in this country of rubber and high explosives, in the process of which anilin and its homologues are used, the symptoms of acute anilinism have become more or less generally known to the medical profession. But these industries are, after all, so new in this country that reports of anilin tumors have not yet appeared in the literature. In Germany, however, the occurrence of these tumors has been recognized for some time. Rehn, in 1895, reported three cases. Lehmann, in his book on industrial diseases, says that in sixty-three cases of anilinism observed by Bachfeld, sixteen patients had bladder affections. In 1904, the Höchst on-the-Main dye works collected from eighteen anilin factories records of thirty-eight cases of tumors of the bladder, eighteen of which ended fatally. Seyberth, in 1907, described in detail five cases in men, all of whom had worked for a year or more in rooms in which they were exposed to anilin. These tumors, he says, may be preceded by mild symp-

toms of chronic poisoning, that is, slight strangury, rather dark urine, and somewhat blue lips and pale face, though the appetite and capacity for work may still be normal (blood examinations were not made). On the other hand, none of these symptoms may be present, and the first sign of trouble may be bloody urine, and on cystoscopy the tumor is discovered. In all of Seyberth's cases the tumors were situated at the base of the bladder near the opening of the ureter, where the urine drops from the ureter, carrying the supposed irritant substances, perhaps paramidolsulphuric acid, in which form the anilin is partly excreted. The tumors may be benign and papillomatous, but probably over half are malignant. In view of the great danger of malignancy, he advises as radical an operation as possible. It is well for those interested to remember that at the first sign of trouble with urine or bladder in anilin workers the advisability of careful cystoscopy should be considered.

"PATENT MEDICINES" THREATENED BY THE FIGHT FOR NATION-WIDE PROHIBITION

"Patent medicines" may become the national beverage of the United States if a nation-wide "bone dry" prohibition law is enacted; or at least one might so infer if one accepted at face value a speech on "Some By-Products of Prohibition," delivered in the United States House of Representatives, June 29, by Hon. Jacob E. Meeker, who represents a St. Louis district. Mr. Meeker himself is not a prohibitionist; but his exposé of the "patent medicine" business has prompted the prohibitionists, it is said, to consider seriously the need for laws for the further regulation of the manufacture and sale of "patent medicines" containing alcohol, with the possibility that necessary legislation may be proposed in the near future as an amendment to some available bill. According to Mr. Meeker, 747 "patent medicines," with alcoholic contents ranging from 0.8 per cent. to 93.5 per cent. are listed by the United States commissioner of internal revenue, and all escape under existing prohibition laws. The Department of Commerce is quoted as stating the total capitalization of "patent" and proprietary medicine concerns as $71,437,000, while the distilling business is said to be capitalized at only $91,000,000. "Patent" and proprietary medicines, according to Mr. Meeker, are tax-free and bring to the United States government not one cent of tax except that paid on the alcohol used in the process of manufacture. A nation-wide "bone dry" prohibition law, without special provisions for the regulation of the manufacture and sale of alcoholic "patent medicines," would, it was asserted, make the $71,437,000 capitalization of the concerns now engaged in their manufacture worth $700,000,000 inside of two years. Referring to the liberty, or the license, now allowed venders of "patent medicines," Mr. Meeker said:

> You would no more permit a brewer to send a circular into your home advising you to use a bottle of beer a day and give another bottle to your baby than you would let him send poison. But you will put one of these bottles up on the shelf with full instructions as to how much to give the baby, how much an adult is to take, and if mother is not watching you can get a good jag on before she can get you. In the name of reform, in the name of common sense, in the name of common decency, I say to the men of this house this afternoon, if you let your prohibition amendment go on with the federal exemption to "patent medicines," you have made a free gift to all men who shall go into the conversion of alcohol into "medicine" instead of beer, wine and whisky, and they escape without tax. . . . The thing that shocks me is that men will not see that when they exempt these "medicine" men from taxation they permit them in the name of "medicine" to put that amount of alcohol into what they sell which, if put into any other drink, would drive the producer out of the country under the whip of public scorn. You would buy that by the bottle to put into your home, and you would say to yourselves, we are fighting the "demon rum." Listen: If the principle of prohibition is right, we should enact it into law, and we should enforce that law if it takes a standing army to do it. If the principle of prohibition is wrong, we should oppose it on the ground of principle and not as a matter of dollars and cents, not as a matter of saving any man's commodity.

END THE MONOPOLY ON SALVARSAN

The Adamson Bill, known as the "trading with the enemy act," has recently been passed by the House of Representatives, is now before the Senate, and will doubtless be enacted into a law. One of its clauses confers authority on the Federal Trade Commission to grant licenses to citizens of this country to operate patents owned by enemy aliens. Physicians are interested in the bill primarily because it includes the salvarsan situation. The manner in which salvarsan has been supplied in this country has been so arbitrary and the prices charged so tremendously above the actual cost, that we should not be satisfied unless the monopoly is ended so that the drug can be supplied at least at a fairly moderate figure, and the old methods eliminated. It is to be hoped, therefore, that the Federal Trade Commission will not grant exclusive control — that is, exclusive license — to any one person or firm. To do so would simply perpetuate the old monopoly and the old conditions. England has adopted a law which, in principle, is similar to the Adamson Bill, and there several concerns have been licensed to manufacture the product. The same should be done here. The Dermatological Research Laboratories of Philadelphia announce that they can supply Arsenobenzol at $1.50 a tube, and that there is immediately available a supply sufficient for any demand that may be made. The same laboratories have announced also that in a few months they will be able to supply hospitals for $1.00 a tube. Considerable responsibility rests on the Federal Trade Commission in this matter, for it is not only a question of monopoly, but also a question of scientific qualifications and ability to make the product on the part of some who may make application. Undoubtedly the commission will secure the cooperation of the United States Public Health Service, under whose supervision these drugs should be manufactured no matter who shall be licensed to make the product.

Medical Mobilization and the War

New Office for Col. Jefferson R. Kean

Col. Jefferson R. Kean has been recalled from service in the Red Cross and is to be placed in charge of the 160 U. S. Army ambulance sections in France. He will be succeeded in his position as director-general of military relief by Mr. John D. Ryan, president of the Anaconda Copper Company. Mr. Henry P. Davison, chairman of the Red Cross war council, says: "It is due to Colonel Kean's magnificient work in organizing base hospital units in this country that the Red Cross organization was the first to carry the American flag to France after our entrance into the war. Colonel Kean is peculiarly qualified for the great work he is to do abroad." Mr. Ryan will take over the supervision of the base hospitals, remaining in this country. He will also have charge of all Red Cross efforts to supply medical needs, including the Red Cross service in connection with the sixteen army cantonments. Before war was declared twenty-six base hospital units had been formed, and the number has since been increased to forty-three, with five navy base hospitals, eighteen hospital units and fifty ambulance companies. According to Mr. Davison, "through the Red Cross and private donations these base hospitals have purchased equipment, including beds, blankets, operating tables, tents, etc., at an expense of at least $2,400,000."

Red Cross to Erect Houses for Convalescent Soldiers

The Red Cross war council will build houses for convalescent soldiers who are able to leave the hospital but are unfit for duty, in the camps at Fort McPherson and Fort Oglethorpe, Ga. At the latter place the organization, at the suggestion of Mrs. Leonard Wood, wife of Major-Gen. Wood, commander of the southeastern military district, has also taken over a stone quarry which it will convert into a bathing pool large enough to accommodate 600. The pool is to be ready for use August 27, when the second officers' training camp opens, and will be constructed under the direction of Col. Herbert Slocum. The convalescent buildings, which will supplement the recreation rooms of the Y. M. C. A., will contain large lounging rooms, writing rooms and wide porches, and amusement and recreation will be provided for the convalescents.

Base Hospital No. 27 (Pittsburgh) Organized for Active Duty

Arrangements are being made to organize for active duty Base Hospital No. 27 of the University of Pittsburgh. The following is the complete medical personnel of the hospital: Majors Robert T. Miller, director; James D. Heard, H. G. Schleiter; Capts. Edward W. ZurHorst, William G. Ray, Stanley Smith, E. W. Fisk, John R. Simpson, Paul R. Sieber, Edward J. McCague, James W. Robinson, Howard H. Permar; First Lieuts. John H. Wagner, Alexander H. Colwell, Andrew P. D. Zumura, Charles B. Maits, Frederick Z. Cassman, Roy R. Snowden, R. C. Clark, Raymond J. Frodey, Ross H. Booth, Frederick Jacobs, Henry T. Metz, Max Neil. The organization will be effected at Allentown, Pa., where the unit will assemble for the training and equipment of the enlisted men.

Medical Reserve Officers from Training Camps Muster in National Guard

During the past week many of the medical reserve officers in the training camps have been sent to various states in order to muster in the National Guard. On Saturday, July 14, ninety-two officers went from Fort Benjamin Harrison to Pennsylvania for this purpose; others were assigned to New York. The reserve officers from Fort Riley, aided by the remaining officers from Fort Harrison, will muster in the National Guard for the Central Department.

Commissions in the Reserve Corps

During the week ending June 30, 1917, six majors, 144 captains and 951 lieutenants were recommended to the adjutant-general of the army for commission in the Medical Reserve Corps. During the week ending July 7, 1917, six majors, 105 captains and 706 lieutenants were recommended for commission in this corps.

Notes on Base Hospital No. 4, U. S. Army, on Active Service*

The following report on the itinerary of the Cleveland base hospital is forwarded by Dr. George W. Crile, director:

On April 28, the director of Base Hospital No. 4 (the Lakeside, Cleveland, unit), received a telegram from the Surgeon-General ordering the immediate mobilization of this unit for service abroad, and asking if the unit could be ready to leave within ten days. An affirmative answer was at once returned, and the work of mobilization was promptly inaugurated.

On May 3, Major H. L. Gilchrist, M. C., U. S. Army, was appointed the commanding officer of the unit, with Capt. A. D. Tuttle, M. C., U. S. Army, and Capt. Titus E. Sturgeon, Q. M. O. R. M. C., U. S. Army, as adjutant and quartermaster, respectively. The mobilization and muster-in was completed on May 6, on the afternoon of which day the unit with its full personnel entrained for New York, sailing on May 8. Aboard the ship the unit was honored by an official visit from the Surgeon-General and Major Noble, M. C., U. S. Army. As this unit was not only the first contingent of the United States Army to be mobilized for service in this war, but also the first unit of the American Army that has ever been ordered to Europe for active duty, the Secretary of War detailed these officers to visit the unit as his representatives on the day of its departure. The Surgeon-General addressed the officers, the nurses and the enlisted men, pointing out the great political significance of this first military expedition, since it represented the inauguration of a departure from the tradition of the United States and opened a new page in our history.

On arrival in Liverpool, May 18, the unit was welcomed by a general officer and administrative medical officer of the British Army, and Colonel Bradley, U. S. Army, from the American embassy. These officers inspected the unit, which was drawn up in parade formation on the saloon deck. General Edwards and Colonel Bradley then made brief addresses from an improvised rostrum, this being flanked on one side by the stars and stripes, on the other by the union jack. Immediately on arrival at Liverpool, Major Crile, director of the professional staff, was temporarily detached from the unit to attend the Inter-Allied Surgical Conference at Paris.

Under the command of Captain Tuttle, the enlisted men went at once to the army post at ———— to gain a brief insight into R. A. M. C. methods. Here they received a royal public and official welcome. The whole town was bedecked with American and British flags and the line of march to the town hall was flanked by R. A. M. C. troops. Here the official welcome was extended by the mayor, clad in his official robes. He closed with the words:

> "In the name of the citizens of ————, I may, I think, say, in the name of the whole British Empire, we accord to you the heartiest welcome it is possible to give manhood. I bow to you and I ask for three cheers for the American citizens who have come to us."

The officers not detailed to duty with the men at ———— were entertained at dinner on the evening of the day of arrival by the Brigadier-General and his staff, and on the following day with the nurses and the civilian personnel went to London, where the former were received by a company of the R. A. M. C., and the nurses officially welcomed by the Countess of Airlie, representing Queen Alexandra, Miss Beecher, matron-in-chief of the Army Nursing Board, and others. At the War Department, Lieut.-Gen. Sir Alfred Keogh, the director-general of the Army Medical Service, and Surg.-Gen. Sir W. Babtie, like General Gorgas, expressed their delight and pride in the fact that the medical departments of the United States and of Great Britain were the first to effect an alliance, not only in the present war, but in history. On Sunday, May 21, Colonel and Mrs. Bradley entertained the officers at luncheon. On Monday, May 21, the officers were received by the adjutant general and the commander-in-chief of the home forces, and commander of the troops in London. On the following day the members of the unit were entertained at tea by Mrs. Page at the American embassy and in the evening of May 23 the Rt. Hon. E. G. V., Earl of Derby, the secretary of state for war, and president of the Army Council, entertained the officers at dinner. The officers were made honorary members of the Overseas Club, and the privileges of

*The official censorship that this article has received makes it less interesting than would otherwise be the case.

the American Women's Club and of various nurses' clubs were extended to the nurses. In short, under the direction and personal attention of the members of a committee consisting of representatives of the British Medical Corps, every possible courtesy and aid was extended to the members of the unit. A lieutenant-colonel of the Royal Army Medical Corps was detailed for duty with the unit during its London stay, and was indefatigable in his attentions, entertaining the senior officers at luncheon at the Senior Army and Navy Club. By special invitation, the nurses visited one of the great military hospitals of London and St. Thomas Hospital, now in part a military hospital.

On the afternoon of the last day before the departure of the unit for its post in France, its members were officially welcomed by the king and queen at Buckingham Palace. The king made the following address:

"It is with the utmost pleasure and satisfaction that the Queen and I welcome you here today. We greet you as the first detachment of the American Army which has landed on our shores since your great Republic resolved to join the world struggle for the ideals of civilization. We deeply appreciate this prompt and generous response to our needs. It is characteristic of the humanity and chivalry which have ever been evinced by the American nation that the first assistance rendered to the Allies is in connection with the profession of healing and the work of mercy."

A personal greeting was then extended by both the king and queen to each member of the party individually, the Prince of Wales and the Princess Mary adding their greeting to the officers.

On May 24, the party left London for its post in France, being joined en route by the enlisted men from ————, and on May 25 arrived at ———, where a cordial and enthusiastic welcome was extended by the populace. From the point of arrival the unit marched to its post of duty. The official welcome to ——— was extended by the base commandant and the commandant of the port, and the British and American consuls. No. 9 General Hospital of the British Expeditionary Force has been assigned to the American unit, and at this writing the members of the unit are being rapidly initiated into their new duties. The commanding officer of this hospital had joined the detachment of Base Hospital No. 4 at ——— and escorted the unit to its post here.

Everywhere, from the moment of its arrival in England, from the man on the street to the king, the unit was most cordially greeted.

PERSONNEL OF BASE HOSPITAL NO. 4, U. S. ARMY (THE LAKESIDE, CLEVELAND, OHIO, UNIT)

ADMINISTRATIVE STAFF

Major Harry L. Gilchrist, Med. Corps, U. S. A., Commanding Hospital
Capt. Arnold D. Tuttle, Med. Corps, U. S. A., Adjutant
Capt. Titus E. Sturgeon, Quartermaster, O. R. C., U. S. A., Quartermaster—3

PROFESSIONAL STAFF

MEDICAL OFFICERS RESERVE CORPS, U. S. ARMY
Major George W. Crile, Director
Major Charles F. Hoover, Assistant Director, Medical Section
Major William E. Lower, Assistant Director, Surgical Section
Capt. Howard T. Karsner, Assistant Director, Laboratory Section
Capt. Henry L. Sanford, Staff Surgeon
Captain Allen Graham, Staff Surgeon
First Lieut. Harold K. Shawan, Staff Surgeon
First Lieut. Thomas P. Shupe, Staff Surgeon
First Lieut. Walter B. Rogers, Staff Surgeon
First Lieut. Benjamin I. Harrison, Staff Surgeon
First Lieut. Drury Hinton, Staff Surgeon
First Lieut. Sam Brock, Staff Surgeon
First Lieut. Richard Dexter, Staff Physician
First Lieut. Chester D. Christie, Staff Physician
First Lieut. Herbert V. Weibrauch, Staff Physician
First Lieut. Harry V. Paryzek, Staff Physician
First Lieut. Marion A. Blankenhorn, Staff Physician
First Lieut. Gordon N. Morrill, Orthopedist
First Lieut. Walter C. Hill, Roentgenologist
First Lieut. Arthur B. Eisenbrey, Bacteriologist
First Lieut. William R. Barney, Registrar—21
DENTAL OFFICERS RESERVE CORPS, U. S. ARMY
First Lieut. Bertram S. Rothwell, Dentist
First Lieut. Alan MacLachlan, Dentist
First Lieut. William S. Sykes, Anesthetist—3
RESERVE NURSES, ACTIVE, U. S. ARMY NURSE CORPS—64
CIVILIAN STAFF—4
MEDICAL DEPARTMENT, U. S. ARMY (ATTACHED)—7
PRIVATES—149
TOTAL PERSONNEL—251

Public Health Service Experts to Protect Training Camps

The Public Health Service plans to place outside of each training camp a sanitary unit with medical specialists to make surveys of health conditions around these camps such as have already been made in the districts immediately surrounding the camps at Little Rock, Ark.; Memphis, Tenn.; Petersburg, Va.; Quantico, S. C., and Louisville, Ky. The work to be accomplished varies for each camp, but generally includes such measures as water supply, drainage, extermination of flies and mosquitoes, and the general health of the neighborhood. The Public Health Service is cooperating with state and local health boards in this work. The passage of a bill now pending in the House of Representatives will provide additional men and funds required to carry on this work.

Height Requirement for the Medical Department of the Army

A physician of Worcester, Mass., inquires whether a physician can obtain a waiver of one-fourth inch in height from the required 64 inches for admission in the regular Medical Corps of the Army or in the Reserve Corps.

ANSWER.—Under the new ruling in connection with the selective draft, men will be admitted who are only 61 inches in height, if otherwise physically capable.

Exemption of Medical Reserve Officers from the Draft

Several physicians ask whether they will be exempt from the draft if they have filed application for the Medical Reserve Corps, but have not received their commissions.

ANSWER.—No.

Mental Tests for Soldiers

Plans have been taken up with the government for the establishment of an outpatient department at Camp Admiral by the officers of the Maryland Psychiatric Base Hospital Unit, of which Dr. A. P. Herring is chairman, and Dr. W. R. Dunton, secretary. The chief object of this department will be to examine soldiers for mental and nervous disorders and to arrange for their treatment, but specialists of various sorts of physical disease will also volunteer their services. The purpose is to have volunteers go to the cantonment at stated intervals and with army surgeons conduct thorough mental tests and physical examinations. The new psychopathic building at the Spring Grove State Hospital, designed for acute cases of mental disease, has been offered to the government, and if it is accepted, patients from Camp Admiral will be treated there. The psychopathic building will also be useful in treating soldiers returned from the front, 18 to 20 per cent. of whom, it has been found in England, are suffering from mental breakdown, temporary or permanent.

New England Contingent to Fort Oglethorpe

The 128 officers and men from the medical and sanitary units of the National Guard of New England have gone to Fort Oglethorpe, Ga., to undergo intensive training in camp. Of these, Maine furnished 2 officers and 4 men; New Hampshire, 5 officers and 13 men; Massachusetts, 15 officers and 46 men; Rhode Island, 3 officers and 13 men, and Connecticut, 6 officers and 21 men. All were mustered into federal service, June 24.

Ordered to Service with Navy

The following medical officers of the United States Public Health Service have been ordered to report to the surgeon-general of the navy for duty: Senior Surgs. Fairfax Irwin, Philadelphia; Louis L. Williams, New York, and William J. Pettus, Charleston, S. C.; Surgs. Gregorio M. Guiteras, Key West, Fla.; George B. Young, Norfolk, Va.; Mark J. White, St. Louis; Bolivar J. Lloyd, Seattle, and Arthur M. Stimson, Washington, D. C.; P. Asst. Surg. William M. Bryan, Boston, and Asst. Surg. R. R. Spencer, Chicago.

Hospital Donated for War Cripples

Mr. and Mrs. Charles D. Freeman have given their 660 acre estate at Iselin, N. J., to be used as a reconstruction hospital. It is expected that the house will accommodate 250 patients when it is opened under the auspices of the American Red Cross in August. Bungalow wards are to be built which will bring the capacity of the place up to 2,000. Dr. Fred H. Albee is to have charge of the undertaking.

Orders to Officers of the Medical Corps

Major Albert G. Love, M. C., from Fort Gibbon, Alaska, to New York, N. Y., medical supply depot.

The sick leave granted Major William A. Duncan, M. C., is extended four months.

Capt. Howard Clarke, M. C., to permanent duty with 8th Reserve Engineers.

So much of Par. 130, S. O. 143, June 21, War D., as relates to Capt. W. T. Cade, Jr., M. C., is revoked.

Lieut. Col. William H. Wilson, M. C., to report in person to commanding general, Panama Canal Dept., for duty as surgeon of department.

Lieut. Col. Jere B. Clayton, M. C., to Fort Sam Houston for duty as sanitary inspector of S. D.

Lieut. Col. Clarence J. Manly, M. C., to Fort Sam Houston as assistant to department surgeon and sanitary inspector of S. D.

Major Harold W. Jones, M. C., in addition to other duties, is detailed as professor of medical department administration at the Army Medical School, Washington, vice Col. James D. Glennan, relieved.

Major Clarence H. Connor, M. C., to report to board at Washington for examination for promotion.

Major Henry F. Pipes, M. C., from further station at Fort Slocum, N. Y., for duty at Jefferson Barracks, Mo.

Sergt. 1st Class Davidson M. Fleming, Med. Dept., to Little Rock, Ark., and take station.

Major L. P. Williamson, M. C., to Pittsburgh, Pa.; Baltimore, Md., and New Haven, Conn., for inspecting the work being done in the production of gas masks.

Maj. Edward B. Vedder, M. C., is detailed as a member of the board of medical officers appointed July 3, 1915, to determine the result of the preliminary examination of applicants and the final examination of candidates for admission to the Medical Corps, vice Col. James D. Glennan, Medical Corps, hereby relieved.

Maj. Harold W. Jones, M. C., will proceed to Watertown, N. Y., for the purpose of inspecting ambulance bodies at the H. H. Babcock Co., Watertown, N. Y., and upon the completion of this duty will return to his proper station.

Capt. W. Cole Davis, M. C., is relieved from further duty at the United States Military Academy, West Point, N. Y., and will proceed to Wrightstown, N. Y., take station, and act as camp sanitary officer during the period of construction of cantonment.

Col. George E. Bushnell, M. C., now on temporary duty in this city, is relieved from further duty at Fort Bayard, N. Mex., and will report in person to the Surgeon General of the Army for duty in his office.

Capt. Charles W. Haverkampf, M. C., is relieved from duty at the United States Military Academy, West Point, N. Y., and will proceed to Fort Oglethorpe, Ga., and report in person to the commanding officer of that post for duty as surgeon and also to take charge of the general hospital.

Capt. William T. Cade, Jr., M. C., will proceed to Atlanta, Ga., and report for duty as camp sanitary officer during the period of construction of cantonments.

Orders to Officers of Medical Reserve Corps

ALASKA

To Allentown, Pa., Lieut. R. V. Ellis, Douglas.

CALIFORNIA

To Ft. Gibson, Alaska, Lieut. Walter E. Leonard, Los Angeles.

To Los Angeles for opening a school for instruction of officers in Roentgenology, Capt. William B. Bowman, Los Angeles.

To report in person to commanding general Western Dept., for assignment to duty, Lieuts. J. M. Rehfisch, Berkeley; J. P. Frizell, Ione; A. E. Boland, Needles; A. C. Magee, San Diego; H. Abraham, L. H. Young, San Francisco and G. W. Burgess, Saratoga.

The resignation of Major Wallace I. Terry, San Francisco, is accepted.

DISTRICT OF COLUMBIA

To Allentown, Pa., Lieut. W. F. O'Donnell, Washington.

To Army Medical School, Washington, D. C., for instruction, Lieut. E. B. Macon, Washington.

To Walter Reed Hospital, Takoma Park, Lieut. W. H. Huntington, Washington.

FLORIDA

To Allentown, Pa., Lieuts. T. G. Croft, C. L. Jennings, Jacksonville, O. F. Green, Mayo; E. E. Strickland, Miccosukee; P. L. Goss, Mulberry; W. J. Vinson, Tarpon Springs and J. O. Phillips, Worthington Springs.

To Ft. Oglethorpe for instruction, Lieut. Arthur L. Izlar, Ocala.

GEORGIA

To Allentown, Pa., Lieuts. J. A. McAllister, Atlanta; G. Burns, Douglas; J. R. Turner, Hickory Level; M. E. Perkins, Millen; H. L. Akridge, Sasser; J. M. Bryant, Savannah, and H. J. Morton, Waynesboro.

To Ft. McPherson, Lieut. Herbert J. Rosenberg, Atlanta.

To Ft. Oglethorpe, for instruction, Capt. George T. Horne, Augusta.

IDAHO

To report by telegraph to commanding general, Western Dept. San Francisco for duty, Lieut. C. S. Moody, Hope.

ILLINOIS

To Allentown, Pa., Lieuts. C. L. Weber, Cairo; V. Hays, Canton; J. L. Foley, V. D. Greer, E. H. M. Griffiths, P. E. Hopkins, E. K. Langford, R. H. Lowry, Chicago; T. Van Boyd, East St. Louis; C. L. Garris, Eldorado; J. F. Wharton, Homewood; J. C. Kimball, Joliet, and H. A. Felts, Marion.

To Ft. Benjamin Harrison, Lieut. T. A. Kreuser, Chicago, and Capt. H. L. Thompson, Harrisburg.

To his home and from further active duty, Capt. Frank E. Pierce, Chicago.

To Ft. Adams, for temporary duty, Lieut. W. H. Evans, Murphysboro.

To Army Medical School, Washington, D. C., for instruction, Lieut. W. L. Smith, Toledo.

INDIANA

To Allentown, Pa., Lieuts. L. A. Elliott, Elkhart; F. A. Brayton, K. L. Craft, H. A. Shimp, W. M. Stout, Indianapolis; E. M. Shores, North Terre Haute; J. G. Kidd, Roann, and C. R. Hoy, Syracuse.

To Ft. Benjamin Harrison for instruction, Lieuts. J. H. Willis, Evansville, and O. A. Newhouse, Montezuma.

To Fort Benjamin Harrison, Lieut. C. K. Jones, Indianapolis.

IOWA

To Ft. Benjamin Harrison for instruction, Lieut. J. S. McAtee, Council Bluffs.

Honorably discharged, Lieut. Frederick Binder, Corning.

KANSAS

To Ft. Riley for instruction, Lieut. E. King, Ft. Leavenworth.

To Fort Riley, Capt. John W. Turner, Fort Riley.

MAINE

To Army Medical School, Washington, D. C., for instruction, Lieuts. D. E. Dolloff, Biddeford, and William C. Whitmore, Portland.

MARYLAND

To Allentown, Pa., Lieuts. E. A. Looper and G. P. Ross, Baltimore.

To Army Medical School, Washington, D. C., for instruction, Lieut. H. P. Makel, Baltimore.

To Ft. Oglethorpe, board of examiners for tuberculosis at the civilian training camp, Capts. Joseph A. Chatard, Clement A. Penrose, and Lieut. John T. King, Jr., Baltimore. For instruction, Capt. T. K. Conrad, Chevy Chase.

MASSACHUSETTS

To Allentown, Pa., Lieut. M. R. Kendall, Boston.

To Ft. Banks, Mass., Lieut. George H. Burke, Springfield.

To Ft. Terry, N. Y., Capt. Isaac S. F. Dodd, Pittsfield, and Lieut. Homer Gage, Worcester.

To Ft. Warren, Mass., Lieut. W. M. Crandall, Lawrence.

Honorably discharged, Lieut. Augustus Riley, Boston.

To Fort Terry, N. Y., Lieut. Frank A. Davis, Boston.

Honorably discharged, Lieut. Henry L. Davis, Lynn.

MICHIGAN

To Allentown, Pa., Lieut. R. G. Edgar, Clarkston.

With Red Cross Ambulance Co. No. 11, Capt. James T. Case, and Lieut. Asa C. McCurdy, Battle Creek.

To Army Medical School, Washington, D. C., for instruction, Lieut. Curtis D. Pillsbury, Ann. Arbor.

Honorably discharged, Capt. Hugo A. Freund, Detroit.

MINNESOTA

To Allentown, Pa., Lieut. L. G. Smith, Montevideo.

To Ft. Riley, Lieut. David M. Berkman, Rochester.

To Sparta, Wis., Lieuts. J. J. Catlin, Buffalo, and G. D. Rice, St. Cloud.

MISSISSIPPI

To Atlanta, Ga., for duty in connection with the organization of American Red Cross Ambulance Co. No. 20, Lieut. W. C. Brewer, Columbia.

MISSOURI

To Allentown, Pa., Lieuts. L. J. Ferguson, Brookfield; G. R. Dagg, North Kansas City; W. A. Fair, Pleasant Hill; E. K. Dixon, St. Louis, and J. A. Powers, Warrensburg.

To Ft. Benjamin Harrison, Capt. Paul R. Fletcher, St. Louis.

To Ft. Riley, for instruction, Lieut. G. A. Tull, Kansas City.

To report to 20th Field Art., Camp Wilson, Ft. Sam Houston for duty, Lieut. William A. Delzill, Springfield.

MONTANA

To report by telegraph to commanding general, Western Dept., San Francisco for duty, Lieut. W. N. King, Victor.

NEBRASKA

To home, Lieut. J. M. Shramek, Omaha.

NEVADA

To report by telegraph to commanding general, Western Dept., San Francisco for duty, Lieut. H. Ostroff, Reno.

NEW HAMPSHIRE

To Boston Base Hospital No. 6 (Massachusetts General Hospital), Capt. Robert W. Holmes, Keene.

To West Point, N. Y., Lieut. S. Miller, Manchester.

NEW JERSEY

To Allentown, Pa., Lieuts. T. Reed, Atlantic City; N. B. Leggett, Morristown, and H. G. Walker, Wycoff.

To Allentown, Pa., Lieut. C. W. Thomas, Woodstown.

To Richmond, Va., for instruction in military roentgenology, Lieut. James B. Edwards, Leonia.

Par. 50, S. O. 145, June 23, 1917, War D., as related to Lieut. Harry Stein, Paterson, is revoked.

NEW YORK

To Allentown, Pa., Lieuts. M. C. Wilson, Bronxville; D. O. Lyon, Mt. Vernon; A. H. Williamson, New York City; Capt. E. Dowdle, Oswego; Lieuts. L. F. Allen, Rochester, and C. B. Witter, Schenectady.

To Army Medical School, Washington, D. C., for instruction, Lieuts. J. O. Parramore, Mt. McGregor; Alan DeF. Smith, and E. R. Easton, New York, N. Y.

To Balboa Heights, C. Z., for duty, Capt. Robt. L. Loughran, New York, N. Y.

To Ft. Oglethorpe, for instruction, Major Richard Derby, New York, N. Y.

To Ft. Strong, Mass., Lieut. Warren Wooden, Rochester.

To Ft. Terry, N. Y., Lieuts. Abraham Ginsburg, and Ruel B. Kariobe, New York, N. Y.

To Rockefeller Institute for Medical Research, New York, N. Y., Major Simon Flexner, New York, N. Y.

To active duty as instructor in Roentgenology in New York City, Major Lewis G. Cole, New York, N. Y.

To report to Surgeon General of Army for duty, Major H. D. Corbusier, New York, N. Y.

To Washington, D. C., for instruction, Lieut. Edmund B. Spaeth, Elmira.

So much of Par. 105, S. O. 134, June 11, War D., as relates to Lieuts. G. K. Rhodes and L. E. Deyoe, New York, N. Y., is revoked.

To home, Major T. W. Hastings, New York, N. Y.

To home and honorably discharged, Lieut. Stanley W. Pallister, Brooklyn.

Honorably discharged, Lieut. F. S. Child, Jefferson.

To Army Medical School, Washington, D. C., for instruction, Capt. J. E. Donnelly, New York.

NORTH CAROLINA

To Ft. Oglethorpe for instruction, Lieut. J. Thames, Wilmington.

To Richmond, Va., for instruction in military roentgenology, Lieut. F. R. Wrenn, Silver City.

The resignation of Lieut. Rigdon O. Dees, Greensboro, is accepted.

OKLAHOMA

To Washington, D. C., for instruction, Lieut. David D. Paulus, Oklahoma City.

OHIO

To Allentown, Pa., Lieuts. W. S. Chamberlain, E. D. Dowds, T. R. Kennerdell, Cleveland, and G. P. Whitwham, Toledo.

To Army Medical School, Washington, D. C., for instruction, Lieut. E. A. Fennell, Cincinnati.

To Cleveland, Ohio, for duty with Ambulance Co. No. 4, Lieuts. R. P. Forbes, J. E. McClelland, and H. O. Ruh, Cleveland.

To Washington, D. C., for instruction, Lieut. Harold O. Brown, Cincinnati.

To home, Lieut. Orville T. Manley, Cleveland.

To home, Lieut. Townsend H. Dickinson, Germantown.

Honorably discharged, Capt. Charles W. Stone, Camp Perry.

OREGON

To report by telegraph to commanding general, Western Dept., San Francisco for duty, Capt. A. A. Finch, Astoria.

PENNSYLVANIA

To Allentown, Pa., Lieuts. H. O. Jones, Altoona; A. G. Beckley, J. W. Dennin, C. L. Fulmer, T. G. Schnabel, Philadelphia, and H. H. Thompson, Philipsburg.

To Ft. Niagara, N. Y., board of examiners for tuberculosis at the civilian training camp, Capt. Milton H. Fussell, Lieuts. Augustus A. Eshner, and David Riesman, Philadelphia.

To Ft. Oglethorpe, Lieuts. L. H. Bernd; Theodore LeBoutillier, Philadelphia, and O. A. Jones, Sharon.

To Allentown, Pa., Lieuts. A. D. Ferguson, Philadelphia, and C. W. Page, Pittsburgh.

To Army Medical School, Washington, D. C., for instruction, Lieut. F. H. Wells, Chester Springs.

To Fort Ontario, N. Y., Lieut. J. P. Burns, Philadelphia.

TEXAS

To Cornell Medical College, New York, N. Y., for instruction in military roentgenology, Lieut. E. V. Powell, Ft. Worth.

To Sparta, Wis., Capt. R. K. Cole, Dallas.

SOUTH DAKOTA

To Allentown, Pa., Lieut. L. M. Field, Aberdeen.

UTAH

To Allentown, Pa., Lieut. J. M. Graham, Fruita.

VIRGINIA

To Gettysburg, Pa., Capt. Robert S. Spilman, Norfolk.

WASHINGTON

To Ft. Riley, for instruction, Capt. S. E. Lambert, Spokane.

To report by telegraph to commanding general, Western Dept. San Francisco for duty, Capt. C. T. Dublin, No. Yakima, and Lieut. F. L. Horsfall, Seattle.

To report by telegraph to commanding general, Western Department, San Francisco, for duty, Lieut. H. C. Burson, Seattle.

WEST VIRGINIA

To home, Lieut. William C. Moser, Morgantown.

WISCONSIN

To Sparta, Wis., Lieuts. C. O. Decker, Crandon; G. R. Randall, Milwaukee; J. W. Monsted, New London; C. H. Nims, Oshkosh; E. G. Festerling, Reedsville, and E. W. Hanson, Three Lakes.

To report for duty by telegraph to commanding general, Western Dept., San Francisco, Lieut. F. Rose, Coleman.

AT FORT BENJAMIN HARRISON

Fort Benjamin Harrison, some 14 miles out of Indianapolis, includes one of the training camps for medical reserve officers. There were at this post, July 14, between 13,000 and 15,000 soldiers, representing practically every branch of army service. The camp is the scene of continuous activity. The days are full of active work and the nights are full of study, recreation and sleep—mostly sleep, and sound sleep. The whole camp qualifies easily as one of the wonders of modern army construction.

POST HOSPITAL

The post hospital is well fitted with modern equipment and the arrangements are well-nigh perfect. Outside the hospital special buildings have been constructed for contagious cases, and for the housing of enlisted personnel. Opposite the post hospital is a quarantine camp in which troops arriving from other posts where infectious disease exists, are detained.

THE TRAINING CAMP FOR MEDICAL OFFICERS

But we are especially concerned with the training camp for medical officers. At the time of this writing—July 13—there are in the camp about 700 medical officers, of whom over four fifths are in the training camp. There are in all 2,500 men in the medical department, including the medical officers, field hospitals, and ambulance companies.

THE BARRACKS

The medical officers' barracks house some fifty to fifty-five men each. The barracks were constructed originally with a view to housing 600 men, but were found inadequate for this purpose so that between the barracks are tents occupied by medical officers of the National Guard. Each two barracks has a separate mess hall, and a building containing shower baths with hot and cold water, urinals and latrines. Everything is flyproof—screened in—and conspicuously new and clean. The men sleep on their folding cots, which are in two rows the length of the barracks, and about 2 feet apart. An aisle about 4 feet wide runs down the center. There is excellent through and through ventilation. The barracks are lighted by electricity but at first the light was hardly adequate to permit intensive night study without some inconvenience. Later the lights were replaced by bulbs of a higher candle power, and this condition, which was perhaps the only source of complaint, is now fully corrected. In one barracks the men invested in special incandescent bulbs of their own selection.

THE MESS

The mess is excellent. The men get what *they* want and what they pay for, the cost being 75 cents to $1 a day per man. When the men arrived the only mess equipment was that issued, the ordinary soldiers mess kit. Most companies bought their own table service—usually granite ware cups and plates. One affluent company spent $150 on china and so-called "silver" mess equipment which they will either donate, bequeath or sell to their successors in camp. The cost and quality of whatever is served meets with flattering treatment in that it is usually wholly consumed.

STUDY AND LECTURE

The men are organized in four companies, some serving for short periods as officers. The days are full of study and drill and lectures and as one man expressed it—"something is doing all the time." In one afternoon there may be French lesson, drill, a lecture on map-making accompanied by the opportunity to go over the surrounding country and indulge in practical work; a lecture on the physics, economics and other intricacies of the horse and the army mule with practical examples, book quizzes, "paper work," more drill, first aid, tent pitching, customs of the service, and what not.

One custom of the camp which has met with approval is that of wearing only the U. S. R. and the caduceus, insignia of rank not being worn except when visiting the city. As one officer said, "Here, for the present, we are all cadets."

RECREATION

The evenings are spent in study, in walks through the camp and the surrounding country-side, in auto rides on the excellent boulevarded roads and in an occasional trip to the city. The permanent barracks are the center of camp life. Here at night are lectures, concerts, motion pictures and vaudeville entertainments. The medical officers are conspicuous in the streets of the city by their absence; rarely does one see the caduceus on the shirt of any of the numerous uniformed men

on the streets of the city. One medical officer remarked: "No, we don't go into town much. I haven't been in but once since we've been here. There's so much to learn and to do, so much to see right here in camp, that a trip to the city is more of a bother than a pleasure."

THE SPIRIT OF THE MEN

One of the instructing officers requested that particular attention be called to the wonderful spirit among the medical officers, and particularly among the enlisted men. There has been no serious breach of discipline among the 2,500 men in the medical department during the entire time that the camp has been in operation. It is this spirit of earnest cooperation and realization of the serious nature of the business ahead which has encouraged the superior officers to enjoy their work and which has made the camp the wonderful achievement that it is.

The following men were in the training camp for medical reserve officers at Fort Benjamin Harrison on July 13:

ARIZONA

Evans, Roy K., Douglas

CALIFORNIA

Oliver, Jean R., San Francisco

COLORADO

McDonald, Wm. J., Fowler
Blackmore, Richard, Farmington

CONNECTICUT

Irwin, Vincent J., Jr., Granby
Griswold, Matthew H., Kensington
Harvey, Carl C., Middletown
Goodridge, F. G., Pomfret Center

INDIANA

Collins, Albert W., Anderson
Hunt, Lee F., Anderson
Beckett, Clinton G., Attica
Hines, Dorsey M., Auburn
Reese, Forest L., Bicknell
Samples, John T., Boonville
Line, Homer E., Chili
Redman, L. H., Elizabethtown
Ehrich, Wm. S., Evansville
Willis, Joseph H., Evansville
Clay, L. R., Ft. Benj. Harrison
Edwards, T., Ft. Benj. Harrison
Hanna, Carl, Ft. Benj. Harrison
Kersten, P., Ft. Benj. Harrison
Jewett, L. E., Wabash
Whisler, Fredk. M., Wabash
Hoffman, Robert Lee, Wichita
Moser, Elmer B., Windfall
Lee, Geo. W., Yates Center

MAINE

Bliss, Raymond V. N., Blue Hill
Webster, Harrison B., Castine
Flint, Edgar T., Foxcroft
Cummings, Edson S., Lewiston
Haskell, Alfred W., Portland
Millikin, John S., Readfield

MASSACHUSETTS

Bowen, James F., Amherst
Boardman, Wm. P., Boston
Cochrane, Robert C., Boston
Fraser, Somers, Boston
Frothingham, C., Boston
Goulding, Timothy F., Boston
Janney, James C., Boston
Mahoney, Daniel F., Boston
Mahoney, John L., Boston
Medalia, Leon S., Boston
Ohler, William R., Boston
Reese, John A., Boston
Carr, Arthur W., Bridgewater
Cady, F. B. M., Cambridge
Lanpher, Howard A., Chester
Gallagher, J. H. C., Chicopee
Mannix, Louis, Chicopee Falls
Emmons, Arthur B., Dover
Simmons, R. H., Fall River
Kearney, John H., Fitchburg
Peters, J. D., Great Barrington
Whelan, Chas., Hingham
Beckley, C. C., Lancaster
Pfeiffer, Albert, Lexington
Pulsifer, Nathan, Lowell
Breed, Nathaniel P., Lynn
Du Bois, Wm. J., Grand Rapids
Martin, Alex. Morrison, G. Rapids
Adams, DeWitt C., Highland Pk.
Foden, Geo. S., Highland Park
Kitson, Verner H., Ionia
Burt, Clarence Edward, Ithaca
Cooley, Randal M., Jackson
Leland, Roscoe G., Kalamazoo
Willey, Gordon F., Kalamazoo
Holm, M. L., Lansing
Shaw, Milton, Lansing
Waters, Geo., Memphis
Mackenzie, Alex. J., Port Huron
Silsby, Don H., St. Johns
Winslow, R. C., Sault Ste. Marie
Woodlock, Lawrence, Stockbridge
Crane, Chas. V., Tawas City
Martin, Jas. R., Traverse City

MISSOURI

Chandeysson, Pierre I., St. Louis
Fletcher, Paul R., St. Louis

NEW YORK

Cochrane, Harold D., Albany
Douglas, Malcolm, Albany.
Papen, Geo. W., Jr., Albany
Tebbutt, Harry K., Albany
Vanderveer, James N., Albany
Van Campen, Benj., Olean
Preston, Willard De Forest, Attica
Coopernail, Geo. P., Bedford
Allerton, S. M., Binghamton
Hooks, Don M., Binghamton
Ackerman, Stephen H., Brooklyn
Brown, Francis X., Brooklyn
Byrne, John B., Jr., Brooklyn
Coogan, Wm. J., Brooklyn
Dexter, Thurston T., Brooklyn
Feinblatt, Henry M., Brooklyn
Gill, Chas. R., Brooklyn

A BIRD'S-EYE VIEW OF THE TRAINING CAMP FOR MEDICAL OFFICERS AT FORT BENJAMIN HARRISON. 1. AN AMBULANCE COMPANY. 2. HEADQUARTERS BUILDING. 3. TENTS USED FOR MEDICAL OFFICERS OF NATIONAL GUARD. 4. MESS HALL. 5. BARRACKS FOR MEDICAL RESERVE OFFICERS.

McGaughey, J. D., Wallingford
Dye, John Sinclair, Waterbury

GEORGIA

Cranston, William J., Augusta

ILLINOIS

Hastings, James B., Alton
Dallenbach, John C., Champaign
Bernart, Wm. F., Chicago
Bremerman, Lewis W., Chicago
Britton, James A., Chicago
Clark, Wm. A., Chicago
Cox, Roy H., Chicago
Deacon, Frank, Chicago
Fisher, Erle F., Chicago
Foley, Thomas P., Chicago
Geiger, Arthur H., Chicago
Irons, Ernest E., Chicago
Kreuser, Theo. A., Chicago
Kuhns, Ralph H., Chicago
Larkin, Wm. R., Chicago
Mayers, Lawrence H., Chicago
Miller, Edwin M., Chicago
Miller, George W., Chicago
Moss, Eli B., Chicago
Musselman, George H., Chicago
Robison, William T., Chicago
Tarnowsky, Geo. de, Chicago
Wilder, Russell M., Chicago
David, Vernon C., Evanston
Iterman, G. E., Griggsville
Butner, Andrew J., Harrisburg
Thompson, H. L., Harrisburg
Kreml, Otto A., Joliet
Cook, Charles E., Mendota
Kendall, Wm. E., New Holland
Coen, Walter W., Springfield
Meader, F. M., Ft. Benj. Harrison
Edlavitch, B. M., Fort Wayne
Fauve, Adrian E., Fort Wayne
Johnson, Robert C., Frankfort
Titus, John M., Hebron
Krebs, Maurice H., Huntington
Daggy, B. T., Indianapolis
Doeppers, Wm. A., Indianapolis
Ducworth, J. W., Indianapolis
Guthrie, George L., Indianapolis
Hickson, Fred E., Indianapolis
Hypes, Francis E., Indianapolis
Pettijohn, B. B., Indianapolis
Shipp, Floyd M., Indianapolis
Thixton, E. DeB., Indianapolis
Titus, Elton M., Indianapolis
Wales, Ernest Dew, Indianapolis
Warpel, Fredk. C., Indianapolis
Wayman, Cecil L., Indianapolis
Storms, Roy B., Kempton
Thompson, B. A., Kokomo
Troutman, R. E., Logansport
McQuown, Otis W., Marion
Magenheimer, V. A., Mooresville
Cox, Harold B., Morristown
Thompson, H. H., Noblesville
Tucker, Fredk., Noblesville
Beaman, Z. M., North Manchester
Lynch, Otho Rees, Peru
Van Mater, Geo. C., Peru
Tucker, Carroll J., Rushville
Jewett, Earl D., Saint Paul
Myers, Edgar H., South Bend
Higbee, Paul, Sullivan
Scott, Garland D., Sullivan
Alexander, O. O., Terre Haute
Carpenter, G. C., Terre Haute
Stout, E. T., Upland
Merrill, Charles H., Lynn
Sanborn, Frederick R., Lynn
Latham, Benoni M., Mansfield
Pease, Charles W., Needham
Collins, J. D., Northampton
Collins, Wm. J., Northampton
Byrnes, Harry F., Springfield
Cort, Parker M., Springfield
Maloney, John M., Springfield
Rumrill, Samuel D., Springfield
Smith, Endix T., Jr., Springfield
Dennen, Ralph W., Waltham
Hollings, Chas. B., Waverly
Chisholm, Miles D., Westfield
Howard, Fred H., Williamstown
Hollis, Fredk., Williamstown
Simmons, E. B., Worcester

MICHIGAN

Chase, Artemus W., Adrian
Lochner, George M., Adrian
Krafa, Rollan W., Ann Arbor
Malejan, Harry M., Ann Arbor
Wile, Udo J., Ann Arbor
Van Camp, Elijah, Athens
Beuker, Bernard J., Atwood
Murphy, Norman D., Bangor
Morrill, W. P., Benton Harbor
Slattery, Matthew R., Bay City
Fisher, Francis G., Cannonsburg
Babcock, Warren L., Detroit
Baeslack, Fredk. W., Detroit
Buck, John D., Detroit
Dreyer, Adolph E., Detroit
McCord, Carey P., Detroit
Newberry, Frederick H., Detroit
Stapleton, Wm. T., Jr., Detroit
Suggs, Frank, Detroit
Harding, Read B., Brooklyn
Harris, Harry C., Brooklyn
Hauff, John J., Brooklyn
Helprin, Benjamin E., Brooklyn
Kane, Arthur M., Brooklyn
Laing, Wm. W., Brooklyn
McGraw, Russell J., Brooklyn
McQuillin, John P., Brooklyn
Moore, F. W., Brooklyn
Norton, H. L., Brooklyn
Reynolds, Robert J., Brooklyn
Robertson, R. S., Brooklyn
Rosenfeld, Joseph, Brooklyn
Grabau, John C., Buffalo
Sparck, Joseph, Castleton Corners
Allen, George S., Clyde
Beattie, Joseph H., Dobbs Ferry
Hicks, Wm. M., Durham
Hovey, Walton, Fairport
Tepper, Abram S., Far Rockaway
MacNeal, Ward J., Forest Hills
Allen, Jas. S., Geneva
Sloat, Harrison G., Glen Cove
Byrne, David C., Jr., Great Neck
Parsons, Alfred H., Great Neck
Tilden, Walter C., Hartsdale
Hayes, Floyd W., Jamestown
Holcombe, Frank M., Keeseville
Steckel, Harry A., Kings Park
Snyder, Fredk., Kingston
Boettiger, Carl, Long Island
Kilcourse, J. J., Long Island City
Mencken, H. P., Long Island City
Ashley, Harmon H., Machias
Clark, Edw. M., Mamaroneck
Ballantyne, Reg. M., Manlius
Donovan, Jas. C., Middletown
Shelley, Hilton J., Middletown

Coghlan, Jasper W., Newark
Baehr, Geo., New York
Beer, Edwin, New York City
Belden, L. de K., New York City
Berens, C., Jr., New York City
Bles, Chas. B. D., New York City
Bolling, R. W., New York City
Bradner, J. C., New York City
Braun, Alfred, New York City
Brewster, H. D., New York City
Brinsmade, D. B., New York City
Busby, A. H., New York City
Caccini, A. M., New York City
Cairns, D. W., New York City
Celler, Herbert, New York City
Clark, Abram S., New York City
Cohn, Sidney, New York City
Colie, E. N., Jr., New York City
Connely, E. McC., New York City
Cornwall, L. H., New York City
Dalton, Wm. A., New York City
De Yoe, Leon E., New York City
Dugdale, A. H., New York City
Eckert, M. M., New York City
Eliasberg, B. H., New York City
Everingham, S., New York City
Framb, Robert T., New York City
Geist, S. H., New York City
Gere, J. B., New York City
Gerster, J. C. A., New York City
Giradansky, New York City
Gottlieb, Chas., New York City
Gray, C. P., New York City
Hartshorne, W. M., New York City
Held, B. J., New York City
Hetrick, L. E., New York City
Holt, R. R., New York City
Hooker, R. S., New York City
Horowicz, B. S., New York City
Imperatori, C. J., New York City
Jaches, L., New York City
Jameson, J. W., New York City
Jones, Lewis P., New York City
Kaplan, D. M., New York City
Kent, James M., New York City

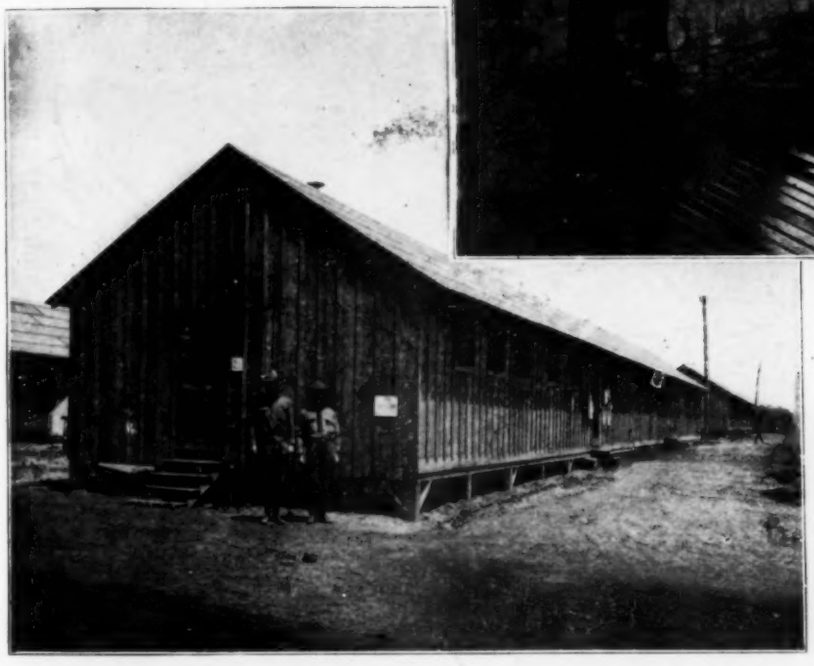
Phillips, B. G., New York City
Poll, Daniel, New York City
Pool, E. H., New York City
Rhodes G. K., New York City
Riley, Hugh A., New York City
Ruddy, W. P. J., New York City
Satterlee, H. S., New York City
Selinger, C. H. S., New York City
Strowger, C. W., New York City
Turner, Reeve, New York City
Van Ingen, P., New York City
Varner, H. H., New York City
Wallace, K., New York City
Warner, J. W., New York City
Weil, R., New York City
Miller, G. L., Niagara Falls
Meeker, J. E., Ogdensburg
Albertson, H. S., Oswego
Rawlson, Ira A., Plattsburg
Cromwell, C. D., Poughkeepsie

Murbach, Clarence F., Archbold
Conard, Robert, Blanchester
Boyle, Frank V., Bowling Green
Caton, Russell J., Bucyrus
Lane, Fred W., Cambridge
Shipley, Ralph T., Carrollton
Applegate, Mat. M., Cincinnati
Deneen, De Enna D., Cincinniti
Metz, Charles W., Cincinnati
Paden, Russell H., Cincinnati
Rhodes, Goodrich B., Cincinnati
Ware, H. J., Cincinnati
Jackson, Harry D., Circleville
Boutwell, Joseph H., Cleveland
Burstein, Theodore, Cleveland
MacFarland, Chas. H., Cleveland
Marine, David, Cleveland
Wagner, Harold F., Cleveland
Albanese, Nicholas A., Columbus
Boucher, Howard E., Columbus

Klein, Elmer A., Norwood
Neal, Charles A., Norwood
Kennedy, Edwin J., Peebles
Haley, Michail R., Piqua.
Teeter, Judson, Pleasanthill
Caldwell, John R., Rayland
Biddle, Victor, Steubenville
Dryer, Charles, Toledo
Eyestone, Fred L., Toledo
Harrison, Jay M., Toledo
Church, Charles G., Van Wert
Ailes, Melville D., Warren
Waller, Chester C., Warren
Hartmann, Carl E., Wauseon
McCurdy, Sidney M., Youngstown
Meyer, Nathan N., Youngstown
Painter, Albin M., Youngstown

OREGON

Osborn, C. C., Portland



SHOWER BATHS

EXTERIOR OF BARRACKS USED FOR MEDICAL RESERVE OFFICERS

King, Jos. E. J., New York City
Kopetsky, Sam. J., New York City
Larson, H. M., New York City
Loeb, Max. L., New York City
Lyle, H. H. N., New York City
Lyttle, John D., New York City
MacGuire, C., New York City
McBurney, M., New York City
McHenry, J. H., New York City
McMillin, M. B., New York City
Mead, T. F., New York City
Myer, L. B., New York City
Morgan, W. A., New York City
Morison, R. A., New York City
Morrow, A. S., New York City
Murphy, J. J., New York City
Nicolson, Wm. P., New York City
Oppenheimer, B. S., N. York City
Palmer, S. D., New York City
Pease, M. C., New York City

Child, Frank S., Port Jefferson
Boddy, Edm. C., Rochester
Bowen, Albert, Rochester
Gage, Geo. H., Rochester
Nacey, Lawrence J., Rochester
Hoehler, John C., Salamanca
Phillips, E. W., Savannah
Mullens, C. E., Slingerlands
Seloyer, Charles W., Stanley
Rapuzzi, Jos., Staten Island
Wiggin, Dayton C., Staten Island
Ballantyne, L. W., Syracuse
Schwartz, Seymour C., Syracuse
Farmer, Harlow G., Watertown
Lord, Lester W., West Ossipee
Benedict, Albert N., Yonkers

OHIO

Barnard, Benj. C., Alliance
Ramsey, P. M., Alliance

McClelland, Chas. E., Columbus
McDowell, John R., Columbus
Osborn, Morse F., Columbus
Smith, Eduard E., Columbus
Hewitt, Archie E., Dayton
Kislig, Fred K., Dayton
Mansur, Wm. B., Dayton
Wilson, Roy A., Dennison
Metcalf, Henry M., Elyria
Smith, Arthur B., Elyria
Cass, James W., Farmer
Dickinson, T. H., Germantown
Lantz, James M., Lancaster
Kerr, George M., Lilly Chapel
Hay, Virgil H., Lima
Hibbard, Burt, Lima
Bennett, Herbert W., Lisbon
Christopher, Harry V., London
Shawecker, K. E., N. Philadelphia
Gill, Robert C., Norwalk

PENNSYLVANIA

Hendricks, Chas. S., Bolivar
Bulgar, Alvine, Braddock
McKibbon, Jas. M., Buck Valley
Little, Theodore Alvin, Corry
Hemphill, David E., Curtisville
Good, John L., Harrisburg
Sharpe, John S., Haverford
Buckley, R. Emerson, Hazleton
Shafer, Charles L., Kingston
Boger, John D., Lancaster
Davis, Henry B., Lancaster
Thomas, Lauren, Datrobe
Lamb, Harold, Mercer
Linn, Charles F., Monongahela
Workman, Wm. M., Mt. Joy
Harper, Howard C., New Castle
Burg, S. S., Northumberland
Schwartz, Grover C., Perkasie
Barron, Charles A., Philadelphia
Bertolet, John A., Philadelphia
Bohn, Zera E., Philadelphia
Cole, Albert N., Philadelphia
Conrad, G. W. H., Philadelphia.
Cornell, Walter S., Philadelphia.
Crampton, George S., Philadelphia
Devereux, Robt. T., Philadelphia
Elliott, John D., Philadelphia
Felterman, W. B., Philadelphia
Franklin, Melvin M., Philadelphia
Guilfoyle, Wm. F., Philadelphia
Hibsmann, Henry H., Philadelphia
Kieffer, Geo. C., Philadelphia
Leopold, Samuel, Philadelphia
Lermann, Wm. W., Philadelphia
Lawrence, J. S., Philadelphia
Lewis, Clarence J., Philadelphia
Lucke, B. H. E. W., Philadelphia
Lynch, John J., Philadelphia
Lynch, Wm. J., Philadelphia
Massey, Bradford, Philadelphia
McCloskey, E. W., Philadelphia
Medley, John E., Philadelphia
Merscher, W., Philadelphia
Ross, Thos. C., Philadelphia

A GROUP OF MEDICAL OFFICERS IN THE TRAINING CAMP FOR MEDICAL RESERVE OFFICERS AT FORT BENJAMIN HARRISON. AT THE EXTREME RIGHT IN THE LOWER ROW IS MAJOR PERCY M. ASHBURN, CHIEF OFFICER; TO HIS LEFT IS MAJOR GEORGE H. SCOTT.

A GROUP OF MEDICAL OFFICERS IN THE TRAINING CAMP FOR MEDICAL RESERVE OFFICERS AT FORT BENJAMIN HARRISON. AT THE EXTREME LEFT OF THE LOWER ROW IS MAJOR JAY R. SHOOK; TO HIS RIGHT IS CAPT. TAYLOR EUGENE DARBY; BACK OF MAJOR SHOOK IS CAPT. HOWARD M. SNYDER.

(This illustration and the one above were in one group which was separated into two sections for reproduction.)

Ryan, Wm. C., Philadelphia
Sheaff, Phillip A., Philadelphia
Stimson, C. M., Philadelphia
Tassman, Isaac, Philadelphia
Winter, Karl D., Philadelphia
Zulick, Jay D., Philadelphia
Ferner, Jos. J., Pittsburgh
Frank, Austin C., Pittsburgh
Hamilton, Sam., Jr., Pittsburgh
Jackson, Daniel F., Pittsburgh
Jackson, Elmer C., Pittsburgh
Lindsay, J. A., Pittsburgh
Proescher, Frederick, Pittsburgh
Van Kirk, Vite E., Pittsburgh
Vaux, Carey J., Pittsburgh
Toland, William A., Pottstown
Longwell, Benj. J., Seminole

Shaffer, Fred. B., Somerset
Mackey, Robert B., Waverly
Pleasants, H., Jr., West Chester
Reichard, Simon W., Wilkes-Barre
Hill, Ralph L., Woodville
Gordon, Edward J., Wyncote

RHODE ISLAND

Holt, Chas. H., Pawtucket
Gardner, George W., Providence
Jordan, H. P. B., Providence
Noyes, Ira H., Providence
Christie, Chas. S., River Point
Donnell, C. E., Tulia.

VERMONT

White, Wm. H., North Troy
Pond, Arlington, Rutland

VIRGINIA

Blanton, Wyndham B., Richmond

WASHINGTON

Van Kirk, Asher W., Elberton
Booth, John R., Seattle

WEST VIRGINIA

Rusmissell, J. A., Buckhannon
Pettry, Benjamin L., Dorothy
James, Maurice C., Hinton
Kearns, Frank M., Hundred
Keatley, Harry W., Hnutington
Lyons, Joseph W., Huntington
Price, Norman R., Marlinton
Eanes, Richard H., Widen

WISCONSIN

Vogel, Carl C., Elroy
Longley, Jonas R., Fond du Lac
Mix, Harry C., Green Bay
Sinn, George, Green Bay
Shimek, Adolf J., Manitowoc
Vander Veer, Jas. N., Martell
Darling, F. E., Milwaukee
Wilkinson, M. R., Aconomowac
Scantleton, John M., Sparta
Bellis, Glenford L., Wanwastosa
Huges, C. W., Winneconne

CANAL ZONE

Evans, Forrest M., Balboa

INTERIOR OF BARRACKS USED FOR MEDICAL RESERVE OFFICERS. NOTE PARTICULARLY REGULATION ARMY FOLDING COT; REGULATION ARMY TRUNK AT FOOT OF BED; BEDDING ROLL; SCREENING AND VENTILATION. THIS PICTURE WAS TAKEN AFTER SOME 200 MEN WERE ORDERED AWAY FOR TEMPORARY DUTY ELSEWHERE.

The following men were at Fort Benjamin Harrison but were ordered elsewhere. Most of them probably have gone for service abroad, some to other stations; a few have been ordered home and honorably discharged:

CALIFORNIA

Chapin, W. A. R., Pasadena

ILLINOIS

Pierce, Frank E., Chicago
Uullman, H. J., Highland Park
Richman, S. H., Oak Forest
Pettit, Roswell T., Ottawa
Griswold, R. W., Pitchfield

INDIANA

Campbell, C. C., Indianapolis
Clevenger, W. F., Indianapolis
Coble, Paul B., Indianapolis
Dubois, Edward J., Indianapolis
McElroy, Jesse L., Indianapolis
Chenoweth, E. B. C., Nineveh

MAINE

Hill, Paul S., Biddeford
Hayden, L. B., Livermore Falls
Anderson, W. D., Portland

MASSACHUSETTS

Riley, Augustus, Boston
Watt, Charles H., Fall River
Tucker, W. M., Hinsdale
Rochford, R. A., Springfield
Kelly, Harvey A., Winthrop

MICHIGAN

Hammel, Harry H., Ann Arbor
Washburne, C. L., Ann Arbor
Clark, Harold E., Detroit
Freund, Hugo A., Detroit
Honor, W. H., Wyandotte

NEW HAMPSHIRE

Bergeron, Pierre, Manchester
Miller, Samuel, Manchester
Straw, Amos G., Manchester
Huse, Earnest L., Meriden

NEW MEXICO

Smith, Fredk. C., Fort Stanton

NEW YORK

Van Winkle, H. L., Albany
Pallister, S. W., Brooklyn
Rankin, John F., Brooklyn
Brooks, N. P., New Lebanon
Baughman, W. H., New York
Cobb, James L., New York
Davis, Thomas K., New York
Gable, Malone L., New York
Osincup, G. S., New York
Hastings, T. W., New York
Worcester, J. N., New York
Almy, Max A., Rochester
Duffy, Francis T., Troy
Silliman, G. S., Westbury

OHIO

Wright, Fred S., Bellaire
Brown, H. A., Cincinnati
Gillespie, William, Cincinnati
Sherry, Leroy B., Cleveland
Spruney, Anton B., Cleveland
Wahl, Harry R., Cleveland
Fenker, William T., Columbus
Dickinson, T. H., Germantown
Maxon, C. W., Steubenville
West, James H., Tiffin
Manley, Orville T., Warren

PENNSYLVANIA

Crouse, Charles C., Derry
O'Reilly, Charles A., Philadelphia
Keely, Henry E., Philadelphia
Redmond, M. S., Pittsburgh
Robinson, G. H., Uniontown

WEST VIRGINIA

Moser, W. C., Morgantown
Lake, Esly T., Muss

PHYSICAL EXAMINATION OF MEN DRAFTED UNDER THE SELECTIVE SERVICE ACT

Methods to Be Followed, and Official Instructions to Medical Examiners

The initial physical examinations of the 687,000 men registered and to be drafted under the Selective Service Law are to be made under direction of the local exemption boards, by the medical members of such boards or by experienced licensed physicians in good standing appointed for that purpose. In the latter case the examining physicians are to be designated by the governors of the state and are to be appointed by the local boards which they are to serve. In addition to the medical member of the local board and in addition to the examining physician, if any, appointed for that board, a physician is to be appointed to make a second examination of every man who is found by the first examiner to be unfit for military service. Additional examining physicians may be appointed if the work of the local board requires—one additional if the men to be examined in any one day exceed eighty, two if more than 120 are to be examined, three if the number to be examined exceeds 160, and others in like ratio. Men accepted by local boards for service will be examined later by army surgeons for physical disability, but not until they arrive at the rendezvous camps.

INTERIOR OF MESS HALL AT FORT BENJAMIN HARRISON

ROUTINE OF NOTIFICATION

As soon as practicable after a local board has determined, in accordance with the regulations governing the matter, the order in which the men within its jurisdiction who have been drafted are liable to be called for military service, it will in the order of such liability send notices to such men, each notice containing a direction to appear for physical examination at a time and place stated in the notice. Normally such examinations will be made within the exemption district within which the man to be examined was registered. A man absent from his normal exemption district and unable to present himself for examination there on or before the tenth day after the mailing of the notice directing him to appear, may, however, on or before that day, file with his proper local board an application for an order directing his examination by another board, and his local board may if it deems proper certify him to that board for examination.

If any man notified by a local board to appear for physical examination shall because of sickness be unable to do so, it will be necessary for him, on or before the tenth day after the mailing of the notice, to prove such inability to the satisfaction of the board, such proof to be made by affidavits, at least one of which shall be made by a licensed physician. If satisfied of his inability to appear, the board may enter an order requiring its examining physician to examine the sick man wherever he may be, within the board's jurisdiction.

Men who do not present themselves for examination before their normal local boards on or before the tenth day after notice, and who within that time make no applications for orders directing their examination elsewhere and no proof of absence on account of illness, are to be regarded as physically fit for military service and are to be recorded accordingly. On just cause shown, however, local boards may authorize the physical examinations of such men later.

ORDER OF PHYSICAL EXAMINATIONS

In making physical examinations and in basing conclusions on the results of such examinations, examining physicians and local boards are to be governed by the regulations which follow, which have been prescribed by the President for that purpose. If an examining physician or a local board is in doubt as to whether or not any man examined is physically unfit for military service, the doubt is to be resolved in favor of his physical fitness and he is to be held qualified. If in any case the examining physician finds the man examined physically unfit for military service, the board must cause him to be examined by another examining physician, designated and appointed for that purpose, who shall make his examination "without reference to or regard for the report of the first examiner."

QUALIFICATIONS

On the completion of the physical examination by one or two physicians as the case may require, the local board conducting the examination shall pass on the physical qualifications of the man examined in accordance with the following rules: If the examining physician making the original physical examination has found the man examined physically qualified for military service, the board shall hold that man to be so qualified. If the first examining physician found the man disqualified and the second examining physician has found him qualified, he shall be held to be physically qualified. If both examining physicians have found the man examined physically disqualified for military service and the board does not concur in such findings, he shall be held to be physically qualified. If both physicians have found the man examined not physically qualified for military service and the board concurs in such findings, he shall be discharged from the draft and a certificate setting forth the conditions of such discharge shall be issued to him in accordance with these regulations.

No discharge shall continue when the cause therefor no longer exists. Whenever a local board determines that such is the case, that board shall at once revoke its certificate of discharge and restore the name of the man to whom it was issued to the list of those called for service. Certificates of discharge shall require by their terms any man discharged conditionally or for a limited time to report to the local board issuing the certificate, immediately on the expiration of the time specified or whenever the conditions entitling him to a certificate of discharge cease to exist.

No man is to be physically examined unless at least one member of the local exemption board other than the medical member is present. No physician shall participate in the physical examination of any man who is related to him "by blood or marriage nearer than a second cousin"; nor shall any member of a local exemption board participate in the physical examination or pass on the physical qualifications for military service who is related to him "by blood or marriage nearer than a second cousin."

Regulations Governing Physical Examinations Under the Selective Service Act of May 18, 1917

Under authority vested in him by the act of May 18, 1917, the President of the United States has prescribed the following regulations governing physical examinations under the act. These regulations prepared by the Surgeon-General of the Army have been published by the War Department. THE JOURNAL reproduces them for the information of physicians.

1. It is important, to begin with, that the examining physician should realize that there will be a certain proportion of men among those presenting themselves for examination who will endeavor to obtain exemption by dissimulation, varying from exaggeration of an existing condition not disqualifying to downright malingering, and he should be prepared to protect the government and himself against such attempts at deception.

2. The physical examination should take place in a large, well-lighted room. The person examined is to be stripped. The examining physician should proceed in substantially the following order, viz:

(*a*) Observe the general condition of the skin, scalp, and cranium, ears, eyes, nose, mouth, face, neck, and chest. Take weight, height, and chest measurements. Accepted measurements are as follows, all chest measurements to be taken on a level just above the nipple:

Height		Weight	Chest Measurement	
Feet	Inches	(Pounds)	At Expiration (Inches)	Mobility (Inches)
5 1/12	61	118	31	2
5 2/12	62	120	31	2
5 3/12	63	124	31	2
5 4/12	64	128	32	2
5 5/12	65	130	32	2
5 6/12	66	132	32 1/2	2
5 7/12	67	134	33	2
5 8/12	68	141	33 1/4	2 1/2
5 9/12	69	148	33 1/2	2 1/2
5 10/12	70	155	34	2 1/2
5 11/12	71	162	34 1/4	2 1/2
6	72	169	34 3/4	3
6 1/12	73	176	35 1/4	3
6 2/12	74	183	36 1/4	3
6 3/12	75	190	36 3/4	3 1/4
6 4/12	76	197	37 1/4	3 1/2
6 5/12	77	204	37 1/2	3 3/4
6 6/12	78	211	38 1/4	4

The following variations below the standard given in the table are permissible, when the applicant is *active, has firm muscles, and is evidently vigorous and healthy:*

Height, Inches	Chest at Expiration, Inches	Weight, Pounds
61 and under 64	1	8
64 and under 68	2	10
68 and under 69	2	12
69 and under 70	2	15
70 and under 73	2	20
73 and upward	2	24

To be acceptable, men below 64 inches in height must be of good physique, well developed, and muscular.

Variations in weight above the standard are not disqualifying, unless sufficient to constitute obesity. Unless exceptionally well proportioned, men above 6 feet 6 inches in height should be rejected.

(*b*) The arms being extended above the head, backs of hands together, the applicant is required to cough vigorously; any form of rupture may now be discovered by the hand and eye, but still better by the index finger passed up to the external ring.

(*c*) The arms remaining extended above the head, the applicant is required to take a long step forward with the right foot and bend the right knee; the genital organs are now conveniently exposed and varicocele and other defects in the scrotum may be recognized.

(*d*) Arms down and the man required to separate the buttocks with his hands, at the same time bending forward; this exposes the anus.

(*e*) Examine heart and lungs; rate of pulse and respiration.

(*f*) Upper extremities: Make sure that all joints are free and supple, from the phalanges to the shoulder.

(*g*) Lower extremities: The person under examination is required to leap directly up, striking the buttocks with the heels, to hop the length of the room on the ball of first one foot and then the other, to make a standing jump as far as possible and repeat it several times, to run the length of the room in double-time several times; after which his heart and lungs are reexamined.

(*h*) *Mental.*—The mental examination should be such as to develop whether or not the man examined is possessed of normal, sound understanding.

(*i*) *Vision.*—To determine the acuity of vision, without glasses, place the person under examination with back to window at a distance of 20 feet from the test types. Examine each eye separately, without glasses, covering the other eye with a card (not with the hand). The applicant is directed to read the test types from the top of the chart down as far as he can see, and his acuity of vision recorded for each eye, with the distance of 20 feet as the numerator of a fraction, and the size of the type of the lowest line he can read correctly as the denominator. If he reads the 20-feet type correctly, his vision is normal and recorded 20/20; if he does not read below the 30-feet type, the vision is imperfect and recorded 20/30; if he reads the 15-feet type, the vision is unusually acute and recorded 20/15, etc.

(*j*) In accordance with these conclusions, the minimum visual requirements are as follows: 20/40 for the better eye, and 20/100 for the poorer eye, provided that no organic disease exists in either eye.

(*k*) *Hearing.*—To determine the acuity of hearing, place the applicant facing away from an assistant who is 20 feet distant and direct him to repeat promptly the words spoken

by the assistant. If he can not hear the words at 20 feet, the assistant should approach foot by foot, using the same voice, until the words are repeated correctly. Examine each ear separately, closing the other ear by pressing the tragus firmly against the meatus. The examiner, whose hearing should be normal, faces in the same direction as the candidate and closes one of his own ears in the same way as a control. The assistant should use a low conversational voice (not a whisper), just plainly audible to the examiner, and should use numerals, names of places, or other words or sentences until the condition of the applicant's hearing is evident. The acuity of hearing is expressed in a fraction the numerator of which is the distance in feet at which the words are heard by the candidate and the denominator the distance in feet at which the words are heard by the normal ear; thus 20/20 records normal hearing, 10/20 imperfect hearing, etc. If any doubt should exist as to the truthfulness of the answers given, a watch should be used, care being taken that the individual does not know the distance from the ear at which it is being held; the watch used should be one whose ticking strength has been tested by trial on a normal ear. The hearing with both ears open should not be below 10/20.

3. The following defects are causes for rejection:

Mental.—Lack of normal understanding.

Skin.—Chronic, contagious, and parasitic diseases, when severe and extensive; chronic ulcers, deep or extensive.

Head.—Abrupt depression in skull, the consequence of old fracture.

Spine.—Curvature, caries, abscess. Lateral curvature is cause for rejection when it exceeds 1 inch to either side of the line of spinous processes, especially when it throws the shoulders out of symmetry.

Ears.—All catarrhal and purulent forms of otitis media; perforation of tympanum.

Eyes.—Acuity of vision below the requirements of paragraph 2 (*j*); conjunctival affections, including trachoma and entropion; strabismus, diseases of the lachrymal apparatus, exophthalmos, ptosis, asthenopia, nystagmus.

Mouth, Nose, and Fauces.—Deformities interfering with mastication or speech, chronic ulcerations, fissures or perforations of the hard palate, hypertrophy of the tonsils sufficient to interfere with respiration or phonation, loss of voice or manifest alteration of it. The person must have at least four serviceable molar teeth, two above and two below on one side and two above and two below on the other side, and so opposed as to serve the purpose of mastication. A good fitting bridge or plate where not more than one-half of the teeth are involved is not disqualifying.

Obstruction of nostrils, or foul discharges indicative of ozena.

Simple atrophic rhinitis is readily curable. Nasal polypi often mean chronic sinusitis, but are not a bar to acceptance for military service. Sunken or scarred nose is often indicative of syphilis, while a red bulbous nose suggests alcoholism or indigestion.

Neck.—Pronounced goiter, great enlargement or ulcerations of the cervical glands.

Chest.—Disease of lungs and heart, especially in flat or narrow or malformed chest. In examining the heart care must be taken not to ascribe to disease the hurried, sharply accentuated action sometimes due to nervousness, fright, or embarrassment, or the irregular action caused by the excessive use of tobacco. Nor should the examiner attach undue importance to the soft systolic murmurs often heard in growing athletic youths, functional and temporary in their nature.

Abdomen.—Chronic inflammations of the gastro-intestinal tract, including chronic diarrhea and dysentery and other diseases of the contained organs; great care should be exercised before exempting for these conditions; hernia in all situations.

Anus.—Hemorrhoids of a pronounced type, prolapsus, fistula and fissures.

Genito-Urinary Organs.—Syphilis when discernible by inspection and physical examination; tight urethral stricture, undescended testicle, chronic orchitis, marked hydrocele; chronic disease of the bladder and kidneys. Varicocele does not constitute a cause for rejection unless it is so large as to interfere with locomotion; it frequently occurs among the most robust men and often without their being aware of its existence. Gonorrhea, acute and chronic, is not disqualifying, but individuals so affected should be advised immediately to secure appropriate medical treatment pending receipt of orders to report for duty.

Affections Common to Both Extremities.—Chronic rheumatism and diseases of the joints of disabling type, irreducible dislocation or false joints, old dislocations if attended with impairment of motion or distortion of the joint, severe sprains, chronic synovitis, badly united fractures, caries, necrosis, atrophy or paralysis, extensive or adherent scars, permanent contraction of muscles.

Hands.—Webbed fingers, permanent flexion, extension or loss of motion of one or more fingers; loss or serious mutilation of either thumb, total loss of index finger of the right hand, total loss of any two fingers of the same hand, or loss of the second and third phalanges of all the fingers of either hand.

Lower Extremities.—Pronounced varicose veins, especially when attended with edema or marks of ulceration, pronounced knock-knees, club feet, flat feet, webbed toes, bunions, overriding or marked displacement or deformity of any of the toes, hammertoes.

The shin bone, if rough, nodulated, and tender, suggests syphilis.

A broad, flat sole is common in laboring classes, particularly among negroes, and is in no way disabling. In the flat foot which renders a man unfit for service the arch is so far gone that the entire border rests upon the ground, with the inner ankle lowered and very prominent and the foot apparently pushed outward. Flat feet are not infrequently the result of tuberculous process.

4. Any of the physical deficiencies mentioned above must be present in such degree as to clearly and unmistakably disqualify the man for military service before he can be found to be physically deficient and not physically qualified for military service.

5. Temporary effects of acute disease or of an injury are not to be regarded as justifying a finding that the person so affected is physically deficient and not physically qualified for military service, but may be regarded as justifying a reasonable delay in completing the physical examination in order that an opportunity for recovery may be afforded.

6. Upon the recommendation of the Provost Marshal General, medical officers will be directed, from time to time, to visit local boards for the purpose of observing the manner in which physical examinations are being conducted and conclusions based thereon. Such medical officers will be authorized to reexamine men whom the local boards have found to be physically deficient and not physically qualified for military service, and will be required to make a report of each such reexamination.

7. These regulations may be modified at any time by the President of the United States.

FORM No. 14, P. M. G. O.
Prepared by the Surgeon General of the Army

PHYSICAL EXAMINATION

.....
(Surname) (Christian name.)
Serial No.....

STATEMENT OF PERSON EXAMINED

Have you found that your health and habits in any way interfere with your success in civil life? If so, give details:
Do you consider that you are now sound and well? If not, state details.
Have you ever been under treatment in a hospital or asylum? If so, for what ailment?

I certify that the foregoing questions and my answers thereto have been read over to me; that I fully understand the questions and that my answers thereto are correctly recorded and true in all respects.

I further certify that I have been fully informed and know that making or being a party to making any false statement as to my fitness for military service renders me liable to punishment by imprisonment.

.....
(Signature of person examined)
..... M.D.,
Examining Physician.
Place,.....
Date,.....

PHYSICAL EXAMINATION BY EXAMINING PHYSICIAN OF LOCAL BOARD

(Person under examination stripped.)

Weight, ... lbs.; height, ... inches.
Girth of chest (at nipples): At expiration,.....inches.
At inspiration,.....inches.
General examination (head, chest, abdomen, extremities):.....
Nose and throat: .....
Heart: .....
Genito-urinary organs (urine will be examined in suspicious cases):....
Hernia: .....

Hemorrhoids: .....
Flat foot or other deformities of feet: .....
Eyes: .....
Vision—Right eye, ...; left eye, ...
Ears: .....
Hearing—Right ear, ...; left ear, ...
Teeth:

		Right								Left							
Missing / Teeth:	Upper,	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
	Lower,	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

(Strike out those that are missing.)

Remarks: .....

I certify that I have carefully examined the person named on the first page hereof and have carefully recorded the results of the examination, and that it is my judgment and belief that he is physically qualified for military service *physically deficient and not physically qualified for military service by reason of .....
..... M.D.,
Examining Physician.

Place, ...
Date, ...

*Strike out clause not applicable.

FINDING OF LOCAL BOARD

Place, ...
Date, ..., 191

The Local Board finds the person named on the first page hereof *physically qualified for military service *physically deficient and not physically qualified for military service by reason of .....
.....
Clerk, Local Board.
.....
Executive Officer, Local Board.

*Strike out clause not applicable.

PHYSICAL EXAMINATION AT PLACE OF MOBILIZATION

(Person under examination stripped.)

Weight, ... lbs.; height, ... inches.
Girth of chest (at nipples): At expiration, ...inches.
At inspiration, ...inches.
General examination (head, chest, abdomen, extremities): .....
Nose and throat: .....
Heart: .....
Genito-urinary organs (urine will be examined in suspicious cases): ....
Hernia: .....
Hemorrhoids: .....
Flat foot or other deformities of feet: .....
Wassermann reaction: .....
Eyes: .....
Vision—Right eye, ...; left eye, ...
Ears: .....
Hearing—Right ear, ...; left ear, ...
Teeth:

		Right								Left							
Missing / Teeth:	Upper,	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
	Lower,	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

(Strike out those that are missing.)

Remarks: .....

I certify that I have carefully examined the person named on the first page hereof and have carefully recorded the results of the examination, and that it is my judgment and belief that he is physically qualified for military service *physically deficient and not physically qualified for military service by reason of .....
.....
.....

Place, ...
Date, ...

*Strike out clause not applicable.

INSTRUCTIONS

1. The name of the person examined and the serial (red ink) number of his registration card will be entered in the spaces for that purpose on page 1 exactly as they appear on his registration card.

2. The questions under the heading "Statement of Person Examined" will be asked by the examining physician and the answers recorded by him before the person to be examined has been stripped. Any answer indicating a possible disqualification will be followed up by searching inquiry and examination and the result noted in the examining physician's report.

3. The physical examination will conform strictly to the requirements of this form and all prescribed regulations and instructions governing physical examinations under the Selective Service Act of May 18, 1917.

4. Deviations from normal, though not cause for finding the person examined physically deficient and not physically qualified for military service, will be noted under the proper headings.

5. The space under the Remarks will be used for continuation of an answer if the allotted space is insufficient, and for any further statement that the examining physician may desire to make.

6. In each case in which, after examination by one examining physician, a reexamination by another is required by regulations, an independent report of the reexamination will be made on this form; and the word "Reexamination" will be entered in red ink under the words "Serial Number" on the first page of the report of the reexamination. After completion of the reexamination the report thereof will be permanently attached to the report of the original examination.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CONNECTICUT

Personal.—Dr. Charles J. Bartlett, New Haven, who recently resigned as professor of pathology in Yale University, has been appointed director of the state laboratory, succeeding Prof. H. W. Conn, deceased. Dr. Bartlett will also continue practice.——Dr. Seldom B. Overlock, Pomfret, has been elected a member of the state board of medical examiners to succeed Dr. John B. McCook, Hartford.——Prof. Charles E. A. Winslow, of Yale Medical School, has gone to Russia as a member of the commission headed by Dr. Frank Billings, Chicago, which is to make a survey of sanitary and health problems.

IDAHO

Unit Begins Work.—Sixty-four members of the new First Idaho Field Hospital Company began their work at the Boise Barracks, July 3. The company is officered by Major Berton O. Clark, Emmett; Capt. Theodore E. Schwarz, Castleford, and Lieuts. Crispin Wright, Fruitland, and Chester A. Leigh, Twin Falls.

State Society Meeting.—The annual meeting of the Idaho State Medical Association was held in Sandpoint, under the presidency of Dr. Charles S. Moody, Hope, and the following officers were elected: president, Dr. William F. Smith, Boise; vice president, Dr. Charles P. Stackhouse, Sandpoint; secretary-treasurer, Dr. Edward E. Maxey, Boise, and trustees of the state journal, Drs. John N. Alley, Lapwai, and William F. Howard, Pocatello. At this meeting the committee of Idaho physicians for medical preparedness and defense merged itself into the state committee for national safety. Dr. Warner H. Carithers, Moscow, was chairman of the committee.

ILLINOIS

New Organization Authorized.—The surgeon-general has been instructed to recruit two additional field hospitals and four ambulance companies before July 25, that the division sanitary organization may be complete.

Health Insurance Bill.—Governor Lowden signed a bill appropriating $20,000 for investigation by the health insurance commissioner, of sickness and death claims of families not covered by the workmen's compensation act.

Personal.—Dr. Sidney D. Wilgus, Rockford, has declined the position offered him as superintendent of the Chicago State Hospital.——Dr. H. Douglas Singer, Hospital, has been appointed alienist to the department of public health.

Chicago

New Dean of Medical College.—Dr. Daniel A. K. Steele, after thirty-five years of continuous service in an official capacity in the College of Medicine, University of Illinois, resigned, July 1, as senior dean, professor of surgery and clinical surgery and head of the surgical department. Dr. Albert C. Eycleshymer, professor of anatomy in the institution, has been elected dean of the institution.

Personal.—Dr. Charles Adams has returned after a stay of several months in the Hawaiian Islands.——Dr. Herman M. Adler, Boston, has been appointed criminologist to the state department of public welfare.——Capt. James J. McKinley has been commissioned major, and assigned to command of Field Hospital No. 4, M. C., Ill. N. G.——Capt. Frederick O. Frederickson has been commissioned major, and assigned to command of Field Hospital No. 3.——Drs. Maximilian Herzog and Arthur I. Kendall have gone to New York to study the pneumonia serum, which is said to have been employed successfully in New York.

MARYLAND

New Obstetric Clinic.—A central outdoor obstetric clinic is to be established on West Lombard Street in Baltimore by the University of Maryland School of Medicine.

Changes in Baltimore and Ohio Staff.—Dr. Edward V. Milholland, Baltimore, has been appointed chief medical examiner for the Baltimore and Ohio system, succeeding

Dr. Joseph F. Tearney, who has retired on account of ill health.——Dr. Royal D. Sykes has succeeded Dr. Milholland as assistant chief medical examiner.

University Hospital Unit Organized at Baltimore.—The University Hospital Unit, comprising surgeons, physicians and nurses of the university, Maryland General and Mercy hospitals, has been completed and it is expected that within two weeks the unit will be off to the front. The physicians and surgeons comprising this unit are: director major, Archibald C. Harrison; adjutant, Capt. Arthur M. Shipley; quartermaster, Capt. William K. White; registrar, First Lieut. Edward A. Looper, all of Baltimore. Surgical staff, Major Frank Martin, Drs. Compton Riely, Herbert H. Haynes, Clarksburg, W. Va.; Hugh W. Brent, Daniel C. Patterson, Bridgeport, Conn.; Chadbourne A. Andrews, Tampa, Fla.; Eugene H. Hayward, Baltimore; Edward W. Johnson, New York, and Thomas K. Galvin, Baltimore, all with the rank of first lieutenant. Medical staff, Capt. Cary B. Gamble, Drs. J. Burr Piggott, Corbin Street, Washington, D. C.; Harry M. Stein, Erwin E. Mayer, all with the rank of first lieutenant. Laboratory staff, Drs. John Evans and D. C. Wharton Smith.

MASSACHUSETTS

Convalescent Hospital Donated.—Mr. and Mrs. James J. Storrow have donated the use of their summer home at Lincoln to the government, to be known as the Lincoln Convalescent Hospital. The staff will be made up of women physicians, including 4 administrative officers, 13 surgeons, 21 physicians, 13 specialists, 3 dentists, 64 graduate nurses and 36 surgical dressing nurses.

Personal.—Dr. Elliott P. Joslin, Boston, has been elected as assistant professor in Hartford Medical School.——Dr. Leverett D. Bristol, Boston, has been appointed state health commissioner of Maine.——Dr. Horace D. Arnold, Boston, has been elected chairman of the Council on Medical Education of the American Medical Association, succeeding Dr. Arthur Dean Bevan, Chicago.——A jury is said to have awarded $8,000 damages to James W. Ray, in the suit brought for the loss of an eye, against Dr. John Morgan, Boston.——Dr. John A. Barry, Charlestown, fell from a second story window while attempting to unfurl a flag, fracturing both wrists and dislocating his right elbow.——Dr. William H. Coon has been appointed health officer of Kansas City, Mo.——Dr. William C. R. Hurley, Boston, has been appointed resident surgeon of the East Boston Relief Station, succeeding Dr. Joseph J. Hagerty, Norwood, who has become visiting surgeon at the Carney Hospital.——Dr. Albert F. Lowell, Gardner, has been appointed associate medical examiner (coroner) of Worcester County.

MICHIGAN

New Hospital.—The Cleveland-Cliffs Iron Company has announced that it will establish a hospital in Ishpeming. The new building will be three stories in height, brick and fireproof, and will accommodate more than fifty patients.

Personal.—Dr. Eugene Smith, Detroit, has resigned as first aid surgeon of the police department.——Lieut.-Col. Angus McLean, Detroit, director of the Harper Hospital, Unit No. 17, has resigned as president of the Detroit Board of Health.——Dr. Roy A. Barlow, Ann Arbor, has been appointed associate otolaryngologist to the Mayo Clinic, Rochester, Minn.——Dr. Walter I. Lillie, Flint, has resigned from the Flint Ambulance Corps and has accepted a position as ophthalmologist at Rochester, Minn.——Dr. James W. Inches, St. Clair, has been reappointed health officer of Detroit.——Dr. Slocomb R. Edwards, eye and throat specialist on the medical staff of the Calumet and Hecla Hospital, Calumet, has resigned and will practice in Grand Rapids.

Courses in War Pathology and Bacteriology.—In order to meet the demand for instruction in pathology and bacteriology of infections and diseases peculiar to modern warfare, the University of Michigan has begun special courses in which the following subjects are taken up: pathology of war infections and diseases in general, by Prof. Aldred S. Warthin and Asst. Prof. Carl V. Weller, including the pathology of camp and trench infections, hospital infections, trauma, repair and military operations; bacteriology of camp and trench infections, by Asst. Prof. Paul H. De Kruif, including the preparation and application of vaccines; serum reaction, use and diagnosis, and control of vaccination; and the study of organisms important in wound and camp infections. The laboratory course will be supplemented by lectures and discussions.

MONTANA

Personal.—Dr. John T. Foley, Lewistown, has been elected chairman of the medical and civil committee of the local chapter of the Red Cross.

Research Association Organized.—A research association has been organized in Bozeman by Drs. James F. Blair, Clyde W. Jump and Roy E. Seitz.

Hospital Items.—More than $100,000 has been secured for the Deaconess Hospital, Billings, by a campaign, which ended July 4.——Construction work has been started on the new hospital, which is being erected in Billings by the Sisters of Mercy. The building will be 200 by 100 feet, five stories in height and will accommodate 176 patients.——The ceremonies, attending the breaking of the ground for the second unit for the new Butte Deaconess Hospital, were held June 7. This unit will be the main surgical unit of the hospital. Funds for the institution now amount to $76,000.——The Bozeman Deaconess Hospital began its seventh year of work, July 1. The building is much crowded and a new building is greatly needed.——The board of directors of the Havre Deaconess Hospital has decided to change the name to the Kennedy Deaconess Hospital of Havre, in memory of Mead Kennedy, who donated the site for the institution. A new building is to be erected at a cost of $54,000.——The new Northern Pacific Hospital, at Missoula, will be ready for occupancy by August 1.

NEW JERSEY

Women Appointed Managers of State Hospital.—Under the law passed at the last session of the legislature, Mrs. H. Crittendon Harris, Glen Ridge, and Mrs. Seymour Cromwell, Mendham, have been appointed by the governor, members of the board of managers of the Morris Plains State Hospital.

New State Board Officers.—At the annual meeting of the state board of health in Trenton, July 3, Dr. William H. Chew, Salem, was reelected president, and Dr. J. Oliver McDonald, Trenton, was elected vice president. Dr. Charles B. Lee, Camden, successor of Dr. Edward A. Ayers, Branchville, was present with the board for the first time since his appointment.

Personal.—Dr. Charles S. Pancoast, Camden, will leave early next month to take charge of Field Hospital No. 3 on the French front.——A dinner was given at Newark, June 2, in honor of Dr. Britton D. Evans, medical director of the Morris Plain State Hospital, to celebrate the completion of a term of service of a quarter of a century. About 250 guests were present.

Medical Inspection and School Hygiene.—The third annual session of the New Jersey State Association of Medical Inspection and School Hygiene was held at Asbury Park, May 26, and the following officers were elected: president, Dr. Waldo U. Kurtz, Asbury Park; vice president, Dr. Eugene H. Goldberg Kearny; secretary, Dr. Ferdinand G. Angeny, Avon, and treasurer, Dr. Henry H. Brinkerhoff, Jersey City.

State Society Meeting.—The one hundred and fifty-first annual meeting of the Medical Society of New Jersey was held in Atlantic City, June 11 to 13, under the presidency of Dr. Philip Marvel, Atlantic City. The following officers were elected: president, Dr. William G. Schauffler, Lakewood; vice president, Drs. Thomas W. Harvey, Orange; Gordon K. Dickinson, Jersey City, and Philander A. Harris, Paterson; recording secretary, Dr. Thomas N. Gray, East Orange (reelected); corresponding secretary, Dr. Harry A. Stout, Wenonah; treasurer, Dr. Archibald Mercer, Newark; delegate to the American Medical Association, Dr. Edward Guion, Atlantic City. Lakewood was selected as the next place of meeting. The association unanimously adopted resolutions pledging the members of the society to sustain the government's present needs, and urging the members to purchase Liberty Bonds and to seek service in the Medical Officers Reserve Corps.

NEW YORK

Valentine Mott Society Election.—The twelfth annual outing of the Valentine Mott Medical Society was held in New Rochelle, June 30. Dr. Frederick P. Hammond was elected president; Dr. Joseph E. Lumbard, vice president; Dr. John Remer, secretary, and Dr. Michael C. O'Brien, treasurer.

Aviation Relief Hospital.—Construction work has been begun on the building of the Aviation Relief Hospital of the National Special Aid Society for the use of the aeronautic

section of the First Battalion of the New York Naval Militia at Bay Shore, L. I. The society has donated the hospital and also the entire equipment.

Transfer of Quarantine Deferred.—The transfer of the quarantine station on Staten Island to the federal government on the payment of $1,395,275 has been postponed until more important matters have been gotten out of the way.

To Rebuild Sanatorium.—The rebuilding of the Sanatorium Gabriels, which was destroyed by fire a year ago, will soon begin. The main building will be replaced by a fireproof structure of steel and concrete, 100 by 50 feet, five stories in height, and, in connection with this building, about fifteen cottages will be erected. The entire improvements will cost about $1,000,000.

Niagara County Tuberculosis Hospital.—The final plans for the Niagara County Tuberculosis Hospital have been sent to Albany for approval by the state department of health. There will be an administration building and two pavilions with a capacity of ninety-two beds. The estimated cost of the buildings is $100,000. The old County Hospital is to be used as an annex.

Tuberculosis Hospital Managers Hold Meeting.—At the annual meeting of the New York State Association of Managers and Superintendents of Local Tuberculosis Hospitals, held in Poughkeepsie, June 30, a resolution was adopted urging "in the strongest possible manner on those in charge of the medical examination of the new army that special and adequate measures be put into effect to secure such examination by those experienced in diagnosis of tuberculosis as will exclude all cases, active or latent." Dr. A. Clifford Mercer, Syracuse, was elected president; Dr. Aden C. Gates, Kingston, vice president; Dr. H. St. John Williams, Poughkeepsie, secretary, and Dr. Robert L. Bartlett, Rome, treasurer.

Personal.—Dr. David M. Totman has been reappointed health officer of Syracuse for the fifth term, commencing July 5.——Dr. Ralph R. Fitch, Rochester, head physician of the Franco-American Hospital, at St. Valery-en-Caux, France, was made a Knight of the Legion of Honor, July 4.——Dr. John H. Pryor has been elected president of the Buffalo Association for the Relief and Control of Tuberculosis.——Dr. De Lancey Rochester and Dr. Francis E. Fronczak were elected directors of the association.——Dr. Harry J. Bendes has been appointed first assistant physician of the J. N. Adam Hospital, Buffalo.——Dr. Francis J. Lennon has been appointed city physician of Buffalo.——Dr. Irene Tognazzini, house physician of the Syracuse Hospital for Women and Children, has resigned to accept a similar position on the staff of the Infirmary for Women and Children, New York.

Antidrug Law Goes Into Effect August 1.—The New York State Health Department makes the announcement that the amendment to the state antihabit forming drug law, enacted at the last legislature, and which was to become effective, July 1, will not go into effect until August 1. The reason for the delay is an inability under the state finance law to contract in advance for the required printing to comply with the new law's provisions. In the meanwhile circulars have been sent to all physicians, druggists, dentists, venterinarians and wholesale dealers and jobbers in drugs containing a copy of this law, and a form for making application for registration under the law, and also a form which is to be used for filing with the state department of health a verified itemized statement of all the drugs mentioned in Section 245 of said act in possession of the recipient of the letter. A duplicate of the inventory filed with the department of health is to be kept by the physician, together with other narcotic records for inspection by the proper officials. A fee of $1 has to be sent with the application, and on receipt of the application an official order book is issued to the applicant bearing his name and registry number.

New York City

Personal.—Dr. Thomas W. Salmon has returned from England.

Fourth of July Injuries.—There was a total of ninety-three injuries due to Fourth of July celebrations treated in the hospitals of Manhattan and the Bronx as the result of accidents with firecrackers and toy pistols.

Large Narcotic Seller Convicted.—Dr. Riley C. Hammers, who has been operating a bogus sanatorium at Tampa, Fla., for drug users, and importing heroin and other narcotics from Havana for distribution throughout the eastern part of the United States, has been sentenced by Federal Judge Hand of this city for two years and nine months in the Federal Prison and to pay a fine of $2,000. It is said that many of the "dope peddlers" of the underworld here have been supplied by this physician.

Public Dehydrating Kitchen.—The Women's University Club, the Mayor's Committee of Women, and the Junior League have begun to can and dehydrate for the community the daily surplus of fruits and vegetables in the market. The work of canning and dehydrating is being done in the school lunch kitchen under the Williamsburg Bridge. The work of sorting has begun under the Erie Pier under the supervision of a committee of volunteer women workers. Each worker will receive a daily work card which will be redeemable in vegetables during the winter.

More Red Cross Gifts.—The New York County Chapter of the American Red Cross announces the gift of several large sums for the purchase of ambulances, among the gifts being one of $7,000 from the Fruit and Produce Exchange. Another gift of $7,000 was received from the Columbia Ambulance Corps and $5,000 from Hunter College for the purchase of ambulances. Fully equipped ambulances have been donated by the Putnam County Women's Auxiliary, the Alexander Hamilton Institute, the Daughters of Pennsylvania in New York, the Mozart Society, and two from the New York chapter of the Daughters of the Confederacy.

OREGON

Personal.—Dr. George Parrish has been appointed acting health officer of Portland, Dr. Marius B. Marcellus, who is on duty with the National Guard, retaining the title of health officer.

Alumni Reunion.—The fifth annual meeting of the Alumni Association of the Medical School of the University of Oregon was held in Portland, June 25-27. At the annual banquet the presidents of the literary colleges, located in the Pacific Northwest, were the guests of the association. The following officers were elected: president, Dr. Adalbert G. Bettman, Portland; vice presidents, Dr. James P. Temiesie, Portland; James H. Robnett, Albany; Lafayette O. Roberts, Portland, and Mark W. McKinney, Seattle; secretary, Dr. Horace P. Belknap, Jr., Portland, and treasurer, Dr. Katherine C. Manion, Portland. Clinics were held at St. Vincent's and Good Samaritan hospitals.

State Society Meeting.—The forty-third annual meeting of the Oregon State Medical Association was held in Portland, June 28-30, under the presidency of Dr. Robert C. Yenney, Portland. The following officers were elected: president, Dr. Edwin E. Straw, Marshfield; vice presidents, Drs. James A. Best, Pendleton; Aaron Tilzer, Portland, and Harry J. Clements, Salem; secretary, Dr. Clarence J. McCusker, Portland (reelected), and treasurer, Dr. Katherine C. Manion, Portland (reelected); delegate to the American Medical Association, Dr. Walter T. Williamson, and councilors, Drs. Paul Rockey and Andrew C. Smith, Portland (reelected). Portland was selected as the meeting place for next year.

PENNSYLVANIA

Sanitary Units in Service.—Ambulance Company No. 4 was mustered into service at Coraopolis, June 14.——Field Hospital No. 4 was mustered into service at Pittsburgh, June 13.

New Schedule at Neversink.—At the meeting of the Berks County Tuberculosis Society it was decided to place the Neversink Mountain Sanatorium on a pay basis. Patients able to pay will be asked to contribute toward their treatment; indigent sufferers from tuberculosis will be given treatment as before.

Personal.—Dr. George L. Beswick, Wilmerding, Pittsburgh, has been elected Grand Sachem by the Great Council of Pennsylvania Redmen.——Dr. Samuel D. Shull has been elected chief of staff of the Chambersburg Hospital, succeeding Dr. Ambrose W. Thrush. Dr. Joseph P. Maclay has been reelected secretary.——Dr. W. F. Sappington, Fulton County, who has been attached to the Royal Army Medical Corps, has been ordered to France.——Dr. Susan S. Moyer has been appointed resident physician at the Harrisburg State Hospital.

National Guard Appointments.—The following appointments are announced: Major Theodore L. Hazlett, Pittsburgh, Field Hospital, No. 4; Major Frederick A. Hartung, Pittsburgh, Sanitary Train; Lieuts. George A. Deitrick, Northumberland, First Cavalry; William M. Workman, Lancaster, Ambulance Company No. 3; John B. Boger, Lancaster, Ambulance Company No. 3; Grant B. Weaver, Lancaster, Ambu-

lance Company No. 3; John E. Marshall, Lebanon, Fourth Infantry; Homer E. Halferty, Pittsburgh, Field Hospital No. 1; Alfred F. Compton, Lancaster, Ambulance Company No. 3; Milton V. Miller, Lancaster, Fourth Infantry; Charles V. Wadlinger, Schuykill, Eighth Infantry; Benjamin F. White, Jr., McCain, Sixteenth Infantry; Albert A. Wagner, Pittsburgh, Ambulance Company No. 4; John C. Kerr, Pittsburgh, Field Hospital No. 4; Sloan A. Brown, Pittsburgh, Ambulance Company No. 4; Edward W. Douglas, Fayette, Field Hospital No. 4; Robert C. Hibbs, Pittsburgh, Field Hospital No. 4; Harry F. Baumann, Pittsburgh, Field Hospital No. 1, and George G. Shoemaker, Pittsburgh, First Field Artillery. ——William H. Clewell, Summithill, has resigned from the medical corps.——Lieut. Charles B. Starr has been relieved from duty with the Fourth Infantry and assigned to duty with Ambulance Company No. 3.

Philadelphia

Government Approves Antinarcotic Bill.—The Antinarcotic bill is now a law, the governor having approved the measure on July 10. Social workers, health officials, physicians and prominent business men, all have labored for the passage of this act for more than two years and feel that they have one of the best legal weapons against the control of the drug evil.

All Passed.—The State Dental Board of Examiners announced on July 11 that the 250 applicants who took the examinations in Philadelphia and Pittsburgh during the month of June had all passed successfully. The next examination will be held in Philadelphia and Pittsburgh on December 5, 6 and 7.

Personal.—Dr. George Woodward has been elected president of the Philadelphia Art Alliance.——Dr. Marx S. Wiesen was shot and seriously wounded by a burglar who entered his home on the morning of July 12.——Dr. J. Milton Griscom has been appointed attending surgeon to the Wills Eye Hospital to succeed Dr. Samuel D. Risley. Dr. Risley, who has served on the staff of the hospital for twenty-seven years, was made consulting surgeon.

Changes in Medical Corps.—Dr. Charles J. Watson has been commissioned first lieutenant, Medical Corps, and assigned to Field Hospital No. 2.——Dr. William N. Parkinson has been commissioned first lieutenant and assigned to Field Hospital No. 3.——Major Frederick O. Waage has resigned and his resignation was accepted, June 20.—Major George S. Crampton has been relieved of assignment to duty with the administration staff and assigned as director, Field Hospital, Sanitary Train.

Naval Unit Formed.—The second medical naval unit to be formed in this city has been completed. It is composed of the staff of St. Agnes' Hospital, as follows: Dr. John A. McGlinn, lieutenant-commander, chief of the surgical division; Dr. Francis J. Dever, lieutenant commander, chief of the medical division; Lieut. Benjamin D. Parish, M.D., laryngologist and otologist; Lieut. Eugene A. Case, M.D., pathologist; Lieut. Gilbert M. Newburger, M.D., roentgenologist; Lieut. Joseph Hart Toland, staff surgeon, and Lieut. Russell S. Boles, M.D., staff physician.

CANADA

Investigating Hospital Methods in Toronto.—A committee of the Third Zone Hospital of the United States, in connection with the American Red Cross, has been in Toronto, studying the work of the Canadian Military Hospitals Commission, which includes the convalescent and reconstruction hospitals. The committee consists of Drs. Sigismund S. Goldwater, New York; Robert W. Lovett, Boston, and Charles H. Frazier, Philadelphia, and Mr. J. J. Webster, secretary of the committee.

Academy for United Medical Service.—The Academy of Medicine of Toronto has adopted a resolution calling for one united medical service in Canada to take the place of the present arrangements of a Canadian Army Medical Corps and a Canadian Hospitals Commission. The academy urges that medical care of all soldiers be placed directly under a surgeon-general, to be known as Surgeon-General of Canada, who should be directly responsible to the minister of militia, who should have a seat in the militia council. He will perform the duties of director of medical services, invalids, and be chief medical officer of the hospitals commission and of its executive. The academy recommended Surg.-Gen. John Taylor Fotheringham, C.M.G., Toronto, recently returned from overseas, for this position.

Personal.—Dr. Norman T. MacLaurin, Toronto, is going overseas as medical officer with a detachment of Forty-Eighth Highlanders, Toronto.——Major Alfred K. Haywood, formerly assistant superintendent of the Toronto General Hospital, has returned to Canada. He has been on active service since August, 1914, and returns to Canada to accept an appointment as superintendent of the Montreal General Hospital.——Dr. Maurice M. Seymour, commissioner of public health for Saskatchewan, has been visiting in eastern Canada. ——Dr. William M. Hart, Regina, Sask., will return to Canada at an early date to take charge of the sanatorium at Fort Qu'Appelle, Sask.——Col. Charles Alfred Hodgetts, medical officer of the Canadian Conservation Commission, Ottawa, who has been doing splendid work for the Red Cross in England and France since the outbreak of war, has been made a Companion of the Order of St. Michael and St. George.——Lieut.-Col. Alexander J. Mackenzie, Toronto, was placed in command of Princess Patricia's Red Cross Hospital, London, England, June 8. Dr. Mackenzie went overseas nearly three years ago as medical officer of a Toronto Highland Battalion of the first contingent.

GENERAL

Army Medical Depot Opened.—A medical supply depot for the departments of the East and Northeast of the United States Army has been opened in Philadelphia at 1210-12 Arch Street. The depot is in charge of Major Carroll D. Buck of the Medical Corps.

Sioux Valley Physicians Elect Officers.—At the annual meeting of the Sioux Valley Medical Association, held in Sioux Falls, June 26 and 27, the following officers were elected: president, Dr. Walter R. Brock, Sheldon, Iowa; vice presidents, Drs. Alfred E. Spalding, Luverne, Minn., and John E. Summers, Omaha; secretary, Dr. George S. Browning, Sioux City, Iowa (reelected), and treasurer, Dr. Nelius J. Nessa, Sioux Falls, S. D.

Meeting of Eye and Ear Men.—At the annual meeting of the Pacific Coast Oto-Ophthalmic Society, held in Spokane, Wash., June 18 and 19. Salt Lake City was selected as the next place of meeting and the following officers were elected: president, Dr. Alexander R. Irvine, Salt Lake City; vice presidents, Drs. Harrington B. Graham, San Francisco, and Richard W. Perry, Seattle, and secretary-treasurer, Dr. Robert R. Hampton, Salt Lake City.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hospital of the Woman's Medical College of Philadelphia, $5,000, and American Institute of Scientific Research, New York, $5,000, by the will of Dr. Anna Lukens, New York.

Memorial Home for Blind, Philadelphia, and Library for the Blind, each $500, by the will of Mrs. Margaret M. Moor.

House of St. Giles, the Cripple, Brooklyn, Industrial Home for the Blind, Medford Sanitarium for Working Men and Women, Faith Home for Incurables, each $1,500, by the will of Samuel Organ.

Warning Against Swindler.—A correspondent from New Rochelle, N. Y., announces that a swindler is working the eastern states. He is a man about 5 feet 10 inches in height, 45 or 50 years of age, with gray hair and mustache, gray eyes, and wears a gray suit. He calls on a physician, claiming to be an uncle of a former classmate, telling the story that he has been asked by his nephew to be sure and call on the doctor and to tell him how well he is doing. As he gets up to leave, the swindler states that he is stranded and asks for a dollar or so to enable him to get to the next town. It is said that he has victimized four physicians in New Rochelle alone.

Topics to be Discussed at the Southern Tuberculosis Conference.—At the Southern Tuberculosis Conference, to be held in Chattanooga, Tenn., November 9 and 10, the following topics have been suggested for discussion:

Relief-giving to tuberculosis cases and the relation of antituberculosis associations to relief agencies.

Hospital or home care in the treatment of tuberculosis.

Rest and exercise for tuberculosis patients.

The antituberculosis association as a political campaigner.

Finding the tuberculous negro.

Open air schools.

Tuberculosis legislation in Southern states, with special reference to district plan for control of tuberculosis.

Red Cross seals.

The relation of state to local associations, with particular reference to finances and program.

LONDON LETTER

LONDON, June 25, 1917.

The War

THE HEALTH OF MUNITION WORKERS

The Health of Munition Workers Committee has issued another report on industrial efficiency and fatigue which embodies researches by Dr. H. M. Vernon on output in relation to work, by Capt. T. H. Agnew of the Army Medical Corps on the health and physical condition of male munition workers, and on the health of female munition workers by Drs. Janet Campbell and Lilian Wilson. On the question of hours of labor, Captain Agnew found a difference between workers engaged before the war and wartime recruits to industry. In the former, the factor of industrial selection had probably operated, so that those employed are in some measure physically select workmen. Among the men and boys engaged since the war there was a distinct relation between the length of hours and the physical condition. Thus, while 22 per cent. of men working less than seventy hours a week were below the highest standard, the percentage rose to 31 in men working seventy hours and more. Among the boys, the percentages for those working less than sixty hours a week and those working sixty hours and more were, respectively, 6.7 and 10.6. The chief points in the recommendations are: (1) reduction of excessive hours, especially when bad transit facilities make a substantial addition to the length of the working day; (2) provision and improvement of canteens; (3) provision of adequate washing accommodation, which usually was very defective; (4) improvement of first aid equipment, and (5) insistence on hygienic qualifications of "welfare workers." The report on the women workers is more satisfactory. Most of the inspectors were "agreeably surprised at their general physical condition." The witnesses, entitled to speak with authority on the health of the workers, with hardly an exception, could not point to any exact data in support of their views. The investigation is obviously in a pioneer stage. The committee therefore emphasizes the need for the establishment of some permanent organization for the collection of scientific data, on which alone can be based the solution of industrial problems intimately connected with the future prosperity of the nation.

INFECTIOUS DISEASES IN THE PAST YEAR

In view of the existence of the war, the government report on infectious diseases in the year 1916 is of particular interest. Curiously several important diseases show a decline when compared with the period before the war. There were twelve cases of plague, four of typhus and 149 of variola, but no case of cholera. The incidence of typhoid has steadily dropped from 0.38 per thousand in 1911 to 0.16 in 1916. On the other hand, diphtheria, puerperal fever, erysipelas and poliomyelitis have shown little variation in the six years. Scarlet fever increased up to 1914 and then diminished. Cerebrospinal fever among the civilian population increased from 0.01 per thousand in 1913 and 1914 to 0.07 in 1915, and fell to 0.04 in 1916. The aggregation of a large proportion of the younger population of the country in camps favored outbreaks of this disease, which then spread to civilians. It is satisfactory that the energetic measures taken to cope with the disease have been successful. Notification of pulmonary tuberculosis in 1912 gave a rate of 3.03 per thousand. In 1916 the rate fell to 2.1, and other forms of tuberculosis showed also a decline, but less marked.

THE AIR RAID AND THE HOSPITALS

The aeroplane raid on London on the morning of June 13 was attended by numerous casualties among the civil population. It occurred so suddenly that the hospitals had practically no warning, such as they received in the case of the Zeppelin raids. The fast aeroplanes now used can arrive over the metropolis within half an hour of their appearance on the coast. At the time of the raid the garden of the London Hospital was full of convalescent patients in wheeled chairs, and on stretcher beds and couches, while several were walking about. All the patients who could not walk had to be brought in by volunteers while the raid was in progress and the raiders could be seen overhead close to the hospital. The balconies were also crowded with beds wheeled out on them. Within an hour of the raid the hospital had treated 207 patients, of whom nearly 100 were admitted. Up to the night of June 19, forty-four had died. At St. Bartholomew's Hospital, 135 victims were treated, of whom fourteen died. The students proved invaluable in carrying in the wounded from conveyances of all descriptions.

MEDICAL OFFICERS KILLED AND WOUNDED

According to the latest returns, the number of medical officers killed in action since the commencement of the war is 137; fifty-eight have died from wounds and sixty-two from disease, and 707 have been wounded. The total of all these figures is 964.

PARIS LETTER

PARIS, June 21, 1917.

Death of Dr. Lucien Picqué

Dr. Lucien Picqué, consulting surgeon of the Army of the Orient, died recently at Rome. He received his M.D. degree in 1876. He was appointed to the military medical service, but resigned in 1880. He then became successively chief of the surgical clinic (1884), deputy surgeon of the state asylums of the department of the Seine (1886) and surgeon of the Hôpitaux de Paris (1887). During the present war he was appointed surgeon of the Army of the Orient at the time of its organization, and took an active part in the installation of the medical units that were first established at the Dardanelles and then at Saloniki. A few weeks before his death he had resigned his commission with the Army of the Orient, and had been charged with a special mission in Italy. It was while still engaged on this mission that he passed away.

As head surgeon of the Saint Anne asylum, Picqué had an opportunity to study at close range mental diseases in their relation to surgery. The results of his studies were set forth in a book entitled "Psychopathies et chirurgie" (1912). He published also a "Traité pratique d'anatomie chirurgicale et de médecine opératoire" (1913).

Death of Dr. Charles Mongour

Dr. Charles Mongour, agrégé professor of internal pathology and medical jurisprudence at the Faculté de médecine de Bordeaux, and physician of the Hôpitaux de Bordeaux, died recently.

Personal

The Académie des sciences has just chosen M. Leclainche as member of the academy to fill the vacancy caused by the death of Professor Chauveau, inspector-general of the veterinary service and author of numerous works on serotherapy, gas gangrene and vaccination against certain animal diseases, etc.

The War

NEW RULING AFFECTING THE APPOINTMENT OF MEDICAL OFFICERS WITH THE RELATIVE RANK OF LIEUTENANT

Justin Godart, undersecretary of state for the military medical service, has just adopted a new ruling, which enables doctors of medicine that are graduates of a French medical school, and that belong to the auxiliary service, to be appointed medical officers with the relative rank of second lieutenant. However, the applications presented by such candidates must be accompanied by certificates showing that they have passed the physical examination required for active army service.

FRENCH MEDICAL UNITS IN RUSSIA

Desirous of giving evidence to its Russian allies of the friendly solidarity existing between the two countries, the French government has organized a threefold medical mission to Russia with a view to lending them aid on their different army fronts. These units comprise surgical and roentgenologic services and a corps to provide for the evacuation of the wounded, etc. One of these groups is destined for the armies on the Russian southern front, a second for Trebizond and a third for the Persian front. One of these has already arrived safely at Petrograd, and will proceed immediately to its destination. The other two will leave France shortly.

AMERICAN WOMAN DECORATED WITH THE CROSS OF THE LEGION OF HONOR

Miss Grace Gassette of Chicago has just received a knight's cross of the Legion of Honor for services rendered in France throughout the war. During Miss Gassette's long stay with the American ambulance corps at Neuilly she has made a specialty of dressings for the wounded.

Marriages

LIEUT. FRANK MILES HEACOCK, Assistant Surgeon, U. S. Navy, Mare Island, Calif., to Miss Edith Faye Adams of Omaha, June 30.

LIEUT. EDWIN PERCY BUGBEE, Assistant Surgeon, U. S. Navy, Chelsea, Mass., to Miss Gertrude D. Freeman of Roxbury, Boston, July 3.

LIEUT. LORENZO FOSTER LUCKIE, M. O. R. C., U. S. Army, Los Angeles, to Miss Finette Turcotte, at Santa Barbara, Calif., June 18.

ROLFE CLARKE NORRIS, M.D., Methuen, Mass., to Miss Margaret Cardigan of Northampton, Mass., June 19.

LIEUT. THEODORE PETERS, M. O. R. C., U. S. Army, to Miss Gertrude Lenhardt of Norristown, Pa., June 27.

EDMUND ROGER SAMUEL, M.D., Mount Carmel, Pa., to Miss Emily Snyder of Stroudsburg, Pa., June 30.

KARL FREDERICK KOENIG, M.D., to Miss Mabel E. Frankenfield, both of Philadelphia, June 30.

EDWARD WINSLOW KARCHER, M.D., Boston, to Miss Edith Ives Quincy of New York, July 3.

CHARLES ROLAND, M.D., Reading, Pa., to Miss Pauline V. Schmidt of Philadelphia, June 30.

THEODORE DAVID BURGER, M.D., to Miss Jessie Evelyn Neill, both of Spokane, Wash., June 21.

THOMAS KIRBY DAVIS, M.D., to Miss Rose Vedder Mabon, both of New York, June 19.

CHARLES ERWIN PITTE, M.D., to Miss Ethel Julia Lyon, both of Chicago, recently.

JONAS LARSON, M.D., Axtell, Neb., to Miss Rose Kellar of Cloquet, Minn., June 19.

ARA A. SHARP, M.D., St. Louis, to Miss Mable Faulkner of Lafayette, Ind., June 27.

Deaths

Thomas Hamilton Hay, M.D., Stevens Point, Wis.; New York University, New York, 1883; aged 56; a Fellow of the American Medical Association; a specialist in tuberculosis; for several years a member of the medical staff of the Northern Wisconsin Hospital for the Insane, Winnebago, and of the Milwaukee County Insane Hospital; founder and for nine years superintendent of the River Pines Tuberculosis Sanatorium, Stevens Point; died in Elizabethtown, N. J., July 29, from heart disease.

James Francis Spelman, Anaconda, Mont.; University of Pennsylvania, Philadelphia, 1890; aged 49; a Fellow of the American Medical Association and formerly president of the Montana State Medical Association; surgeon and chief of staff to St. Anne's Hospital, Anaconda, and surgeon of the Butte, Anaconda & Pacific Railroad; for many years a member and chairman of the local school board; died at his home, July 1.

Nicholas Cornelius Schlitz, M.D., Des Moines, Iowa; Rush Medical College, 1892; aged 51; a specialist on internal medicine; formerly a Fellow of the American Medical Association; a member of the Iowa State Medical Association; for nineteen years a member of the faculty of Drake University, Des Moines; professor of pathology in Des Moines Dental College; died at his home, July 1, from malignant disease.

John William Watson, M.D., Boston; College of Physicians and Surgeons, Baltimore, 1900; aged 46; a Fellow of the American Medical Association; a member of the board of instruction of Tufts Medical and Dental School, Boston; assistant medical examiner (coroner) of Suffolk County, South District; died in the Deaconess Hospital, Brooklyn, June 23, nine days after an operation for appendicitis.

Herbert Gordon Jones, M.D., Utica, N. Y.; New York University, New York, 1881; aged 59; formerly a Fellow of the American Medical Association; ophthalmic surgeon to the Utica Masonic Home since 1893; visiting surgeon to St. Luke's Hospital, Utica, since 1886; coroner of Oneida County since 1885; president of the Oneida County Medical Society, in 1905 and 1906; died at his home, about July 5.

Robert F. Wallace, M.D., Chula Vista, Calif.; University of Tennesee, Nashville, 1886; aged 58; formerly a Fellow of the American Medical Association and secretary of the Shasta County Medical Society, at one time a member of the board of health of Redding, Calif.; died in San Francisco, June 24, from injuries received in a streetcar accident ten days before.

Charles E. Beardsley, M.D., Ottawa, Ohio; University of Michigan, Ann Arbor, 1863; Bellevue Hospital Medical College, 1870; aged 82; a specialist on diseases of the eye, ear, nose and throat; a Fellow of the American Medical Association; surgeon of the Twenty-First Ohio Volunteer Infantry during the Civil War; died at his home, June 26, from heart disease.

Quitman Holton, M.D., Douglas, Ga.; Emory University, Atlanta, Ga., 1902; aged 45; at one time mayor of Broxton, Ga.; formerly a Fellow of the American Medical Association; a member of the Medical Association of Georgia; formerly president of the Coffee County and Eleventh District medical associations; died at his home, June 30, from tuberculosis.

James Henry Montgomery, M.D., Erie, Pa.; College of Physicians and Surgeons in the City of New York, 1884; aged 58; a Fellow of the American Medical Association; president of the Erie County Medical Society; surgeon to the Hamot Hospital, Erie, from 1888 to 1892; died in a sanatorium at Mercer, Pa., June 27, from heart disease.

Augustus Abraham Rosenbloom, M.D., New York; Cornell University, New York, 1902; aged 37; a Fellow of the American Medical Association; assistant gynecologist to the Cornell University Medical College Dispensary; attending gynecologist to the outpatient department of Sydenham Hospital; died at his home, June 28.

James Alexander Haven, M.D., Brookfield, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1890; aged 59; a member of the Medical Society of the State of Pennsylvania; general manager of the Summerville Telephone Company for nineteen years; died at his home, June 28, from acute gastritis.

Robert Buchanan Kennedy, M.D., New York; University and Bellevue Medical College, 1908; aged 33; a member of the Medical Society of the State of New York; assistant surgeon to St. Luke's Hospital, New York; captain in the Eighth Regiment of Coast Defense; died at his home, June 26.

Henry Jefferson Campbell, M.D., Huntingdon, W. Va.; Columbus, Ohio, Medical College, 1887; University of Louisville, Ky., 1893; formerly a Fellow of the American Medical Association; a member of the West Virginia State Medical Association; aged 56; died at his home, May 6, from heart disease.

Bert Heald Bailey, M.D., Cedar Rapids, Iowa; Rush Medical College, 1900; aged 42; one of the most prominent ornithologists of the Middle West; professor of zoology and curator of the museum of Coe College, Cedar Rapids, since 1900; died at his home, June 22, from abscess of the spleen.

Daniel Frederick Grasse, M.D., Chicago; Rush Medical College, 1899; aged 45; formerly a member of the Illinois State Medical Society; assistant in genito-urinary surgery in his alma mater; died in the Elgin State Hospital, July 3, from meningitis, due to an infection received in 1906.

Joseph H. Grable, M.D., Hyde Park, St. Joseph, Mo.; Ensworth Medical College, St. Joseph, Mo., 1895; aged 48; for many years a practitioner of Wathena, Kan.; local surgeon to the St. Joseph and Grand Island Railway; for the last six years an invalid; died at his home, June 25.

William M. Terrell, M.D., Graham, Texas; Vanderbilt Medical College, Nashville, Tenn., 1883; Atlanta Medical College, 1885; aged 62; formerly a Fellow of the American Medical Association; a member of the State Medical Association of Texas; died at his home, June 23.

A. H. Neathery, M.D., Farmersville, Texas; Vanderbilt University, Nashville, Tenn., 1853; aged 83; president of the First National Bank of Farmersville for thirty years; was struck by a Santa Fe freight train at Farmersville, April 24, and instantly killed.

Stewart Wilson Outwater, M.D., Saranac Lake, N. Y.; University of Bishop's College, Montreal, 1892; aged 48; a member of the British Medical Association and Medical Society of the State of New York; died in Montreal, April 15, from radium burn.

Austin Wilbur Sidney, M.D., Fitchburg, Mass.; Eclectic Medical College of Pennsylvania, Philadelphia, 1860; Dartmouth Medical School, Hanover, N. H., 1881; aged 93; a

member of the Massachusetts State Medical Society; died at his home, June 25.

George Abraham Teal, M.D., Kendallville, Ind.; Rush Medical College, 1882; aged 60; formerly a Fellow of the American Medical Association; for several sessions enrolling clerk of the Indiana Legislature; died at his home, July 1, from angina pectoris.

Phebe Rebekah Johnson, M.D., Fishkill, N. Y.; Eclectic Medical College of the City of New York, 1880; aged 73; for many years a practitioner of New York City; died at the home of her daughter in Larchmont, N. Y., July 3, from heart disease.

Jacob L. Berthold, M.D., Perham, Minn.; University of Maryland, Baltimore, 1886; aged 57; a Fellow of the American Medical Association; a member of the staff of St. James' Hospital; died at his home, July 6, from carcinoma of the colon.

William E. Provines, M.D., Albuquerque, N. M.; Hospital College of Medicine, Louisville, 1897; a member of the New Mexico Medical Society; while fishing on the bank of a stream near Springerville, Ariz., June 24, died suddenly from heart disease.

Thurston Green Packer, M.D., Smyrna, N. Y.; Bellevue Hospital Medical College, 1881; aged 74; formerly a Fellow of the American Medical Association; for many years health officer of Smyrna; died at his home, May 28, from cerebral hemorrhage.

Walter L. Pursselley, M.D., Springfield, Mo.; Missouri Medical College, St. Louis, 1897; aged 50; a member of the Missouri State Medical Association and county physician of Greene County; died at his home, June 21, from cerebral hemorrhage.

George Tilghman McWhorter, Riverton, Ala. (license, Colbert County, Ala., 1881); aged 68; formerly a Fellow of the American Medical Association; a member of the Medical Association of the State of Alabama; died at his home, June 29.

Richard S. Graves, Austin, Texas (license, Texas, Twenty-Sixth Judicial District Board, 1895); aged 73; a practitioner since 1871; for more than twenty-three years physician of Austin and Travis County; died at his home, June 24.

Albert Valentine Veazie, M.D., New York; Tulane University, New Orleans, 1909; aged 38; for several years surgeon on steamers of the United Fruit Company; died at the home of his father, New Orleans, June 30, from nephritis.

William Victor Howland, M.D., Jeffersonville, Ind.; Medical Reserve University, Cleveland, Ohio., 1877; aged 70; formerly a Fellow of the American Medical Association; a veteran of the Civil War; died at his home, May 18.

Frank Berry Reagor, M.D., Shelbyville, Tenn.; University of Tennessee, Nashville, 1891; aged 56; a Fellow of the American Medical Association; died at the home of his brother, in Shelbyville, June 29, from heart disease.

James A. Loggins, M.D., New York; College of Physicians and Surgeons in the City of New York, 1913; aged 33; formerly an intern in the New York Post-Graduate Hospital; died in Seattle, June 25, from miliary tuberculosis.

John Eugene Garrey, M.D., Aurora, Ill.; Rush Medical College, 1878; aged 69; formerly a member of the Illinois State Medical Society; a member of the staff of the Aurora City Hospital; died in Telluride, Colo., June 29.

James Leslie Penn, M.D., Gadsden, Ala.; Vanderbilt University, Nashville, Tenn., 1911; aged 31; formerly a member of the Medical Association of the State of Alabama; died at his home, May 2, from pulmonary tuberculosis.

Franklin H. MacFarland, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1892; aged 49; a Fellow of the American Medical Association; a member of the Philadelphia Pediatric Society; died at his home, May 20.

William Henry Bullis, M.D., Rochester, N. Y.; Queen's University, Kingston, Ont., 1884; aged 59; a member of the Medical Society of the State of New York; died at his home, June 28, a year after a surgical operation.

Samuel William French, M.D., Milwaukee, Wis.; Harvard Medical School, 1878; aged 67; a Fellow of the American Medical Association; one of the founders of the Emergency Hospital; died at his home, June 30.

Glenn Everett Miller, M.D., Whiteoak, Okla.; Eclectic Medical Institute, Cincinnati, 1906; aged 39; formerly a member of the Oklahoma State Medical Association; died at his home, June 13, from typhoid fever.

E. Christie, M.D., Lloyd, Fla.; Atlanta, Ga., Medical College, 1883; a member of the house of representatives from Leon County, Florida, and for many years a pharmacist of Lloyd; died at his home, June 23.

Isaac Lonzo Neely, M.D., Corydon, Ind.; Kentucky School of Medicine, Louisville, 1882; aged 61; formerly a member of the Indiana State Medical Association; died at his home, June 24, from chronic nephritis.

Archibald J. Kearns, M.D., Loup City, Neb.; Missouri Medical College, St. Louis, 1886; aged 59; a Fellow of the American Medical Association; died at his home, June 15, from arteriosclerosis.

Seba S. Bedient, M.D., Little Valley, N. Y.; University of Buffalo, N. Y., 1878; aged 61; a member of the Medical Society of the State of New York; died at his home, June 21, from typhoid fever.

James Partridge, M.D., Alton Park, Tenn.; Chattanooga, Tenn., Medical College, 1909; aged 46; formerly a member of the Tennessee State Medical Association; died at his home, June 24.

Walter Penquite, M.D., Chickasha, Okla.; Medical College of Ohio, Cincinnati, 1889; aged 53; a Fellow of the American Medical Association; died at his home, June 5, from myocarditis.

Robert C. Black, M.D., Gainesville, Tex.; Rush Medical College, 1858; aged 80; a surgeon in the Confederate service during the Civil War; died at his home, June 23, from heart disease.

Webster Eber Gray, M.D., Nashville, Tenn.; Meharry Medical College, Nashville, 1908; aged 40; professor of medical chemistry and botany in his alma mater; died at his home, June 23.

Amory Chapin, M.D., Boston; College of Physicians and Surgeons in the City of New York, 1881; who retired from practice twenty years ago; died at his home, June 25.

Edgar Barzillai Sharp, M.D., Berlin, N. J.; Hahnemann Medical College, Philadelphia, 1876; aged 62; died in his office, June 26, from angina pectoris.

Charles Hubbard Howland, M.D., New Haven, Conn.; Yale University, New Haven, 1880; aged 66; died in his office, June 25, from heart disease.

Thomas H. Chambers, M.D., Georgiana, Fla.; Albany, N. Y., Medical College, 1855; aged 85; died in a hospital in Daytona, Fla., June 22.

Richard H. Lewis, M.D., Kinston, N. C.; University of Pennsylvania, Philadelphia, 1886; aged 85; died at his home, May 15, from senile debility.

John James McWilliams, M.D., Charter Oak, Iowa; Rush Medical College, 1883; aged 56; died at his home, March 1, from paresis of the bowel.

Thomas Shaw, M.D., Ypsilanti, Mich.; University of Michigan, Ann Arbor, 1870; aged 71; died at his home, March 19, from general paresis.

Robert E. Lawrence, Dayton, Ohio (license, West Virginia, years of practice, 1881; license, Ohio, 1896); aged 68; died at his home, June 16.

Allan Anthony Kennedy, M.D., New Orleans, La.; Tulane University, New Orleans, 1906; died at his home, March 3, from pneumonia.

Belfield Neud Jobe, M.D., Danville, Tenn.; University of Tennessee, Nashville, 1897; died suddenly at Stewart Station, Tenn., April 26.

James M. Tubb, M.D., Bessemer, Ala.; Memphis Hospital Medical College, Memphis, Tenn., 1893; aged 66; died at his home, June 20.

Forest G. Cosby, M.D., Dixon, Ky.; University of Louisville, Ky., 1894; died suddenly at his home, April 25, from heart disease.

Joseph A. Phillips, M.D., Rockdale, Tex.; Marion-Sims Medical College, St. Louis, 1892; aged 55; died at his home, April 25.

Samuel B. Boyd, M.D., Knoxville, Tenn.; University of Pennsylvania, Philadelphia, 1865; aged 64; died at his home, June 13.

Silas Hubbard, M.D., Buffalo, N. Y.; Castleton, Vt., Medical College, 1843; aged 96; died at his home, May 18.

Albert Humphreys, M.D., Wooster, Ohio; Columbus, Ohio, Medical College, 1882; died at his home, June 4.

L. J. Dorsey, Batesville, Ark. (license, Arkansas, 1903); aged 76; died at his home, June 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

LOW'S WORM SYRUP

A Dangerous Santonin Mixture

Low's Worm Syrup is made and sold by Smith, Kline & French Company, Philadelphia. The preparation, like so many of the worm syrups on the market, is of the usual dangerous santonin-containing type, although no hint is given even of the presence of this product nor any warning that it contains a poison. The label on the product as sold at present declares the presence of 11 per cent. alcohol. The older preparation, some of which is still on the druggists' shelves and is furnished when Low's Worm Syrup is called for, is labelled as containing 18 per cent. alcohol. In each case, "the alcohol present is essential as a solvent and preservative."

The circular that accompanies the newer product when compared with the circular around the older product is seen to exhibit certain modifications which safeguard the manufacturer from legal action more than they protect the consumer from possible poisoning. The phrase "most safe and pleasant" of the older circular becomes simply "most pleasant" in the newer circular. Where before it was "simply an impossibility for worms to remain" where Low's Worm Syrup is given, the public now is told that, under similar conditions, it is "most difficult for worms to remain." The older circular recommended it—"even when there are no worms"—as a "most useful" preparation for children "with cholera morbus, dyspepsia, costiveness and general debility." "Tape worms of 15 or more feet" have been expelled, so the public is told in the new circular, by Low's Worm Syrup; the older circular is a little more specific, giving the measurement of the tape-worms as "15 to 35 feet in length." The older circular declares: "There is nothing like it." The new circular omits this statement; whether from a sense of modesty or a fuller appreciation of the possibilities behind the federal Food and Drugs Act, we do not know.

The directions on the bottle-label, both of the newer and the older preparations, are:

> "A child under 1 year old may take ½ teaspoonful 3 times a day; 2 years, 1 teaspoonful 4 times a day; 3 to 5 years old, 2 teaspoonfuls; 5 to 10 years, 2½ teaspoonfuls. Adults, 1 tablespoonful, one hour before meals.
> "Observe a mild diet.
> "Continue its use until it acts as a purgative.
> "For Tape Worm double the dose."

Some of the newer specimens of Low's Worm Syrup, purchased on the open market, were turned over to the Chemical Laboratory of the Association for examination. The chemists' report follows:

CHEMISTS' REPORT

"Specimens of Low's Worm Syrup were examined. The preparation tested was a thick, dark brownish syrup having an odor and taste resembling Dr. Hand's Worm Elixir. The presence of 11 per cent. of alcohol was declared. Further than this, the trade package furnishes no information concerning the composition of the preparation. A considerable quantity of suspended matter was noted. This was of a yellowish color, and, together with the therapeutic indications for the preparation, suggested the probable presence of santonin. Qualitative tests indicated the presence of santonin, alcohol, sucrose (sugar) and extractives from some emodin-bearing (laxative) drug, probably senna. The lack of a noticeable bitter taste indicated the absence in more than traces of many of the common laxatives, such as aloes or colocynth. If present, their quantities must be small. The purgative salts, such as Epsom salt, Rochelle salt, etc., were absent. Pomegranate and pink root, or their extractives, were absent. The quantitative examination was limited to the determination of santonin. The quantity found amounted to about 0.93 gm. per 100 c.c. of the preparation, or about 4.2 gr. per fluidounce. Each dram (teaspoonful) of the preparation, therefore, contains a little more than one-half of a grain of santonin."

Santonin is a poison. One grain has produced serious poisoning in children and two doses of one grain each have been fatal. Total blindness and death are among the results that have followed the use of the drug. Headache, dizziness and convulsions, with stupor, loss of consciousness and death represent the train of symptoms following poisonous doses of santonin. As the chemists have shown, each teaspoonful of Low's Worm Syrup contains over half a grain of santonin. The directions as quoted above recommend that a child of two years be given one teaspoonful four times a day or the equivalent to two grains of santonin a day. The directions for children from three years of age and older calls for from 2 to 2½ teaspoonfuls presumably four times a day, at least the wording of the label is so ambiguous that the mother may readily assume that that is what is meant. This means giving children from 4 to 6 grains of santonin daily!

The action of santonin, because of its excretion through the kidneys, is likely to be cumulative. Sollmann, in his "Manual of Pharmacology," warns that the drug should only be given under the supervision of a physician and states that half a grain may be given for two or three doses, according to age, to children of from two to five years of age "and then not repeated for at least three days." In spite of these facts, the Low's Worm Syrup circular urges mothers to "lose no time, but resort at once to Low's Worm Syrup" whenever their children are troubled with such symptoms as:

> "Pain in the joints, 'all gone' feeling at the stomach, drowsiness, bad breath, picking at the nose, grinding of the teeth, a gnawing sensation of hunger, flashes of heat, chills or shivering, vertigo, disturbed sleep, startling dreams, want of appetite or excessive appetite, pain in the stomach or bowels, nausea, indigestion, costiveness and convulsions."

The disregard of public safety exhibited in the exploitation of Low's Worm Syrup brings back to mind the fact that the manufacturers of this nostrum, Smith, Kline & French Co., were one of the "patent medicine" concerns that wrote to New York druggists urging them to refuse to obey the law that requires a statement of the potent ingredients of all "patent medicines" sold in New York City either to be filed with the Department of Health or to be plainly printed on the label. THE JOURNAL in its issue of November 27, 1915, called attention to this and told of the reply that one law-abiding New York druggist sent to Smith, Kline & French Co. This druggist pointed out that the fact that the company was opposed to giving the Health Department a statement of the active ingredients of its preparation was "strong presumptive evidence that the claims you make for these preparations are false."

The problem presented by such preparations as Low's Worm Syrup is simple in principle but, because of the power of entrenched wealth, difficult of application: There is no excuse in economics or morality for putting on the market as a home remedy preparations containing so dangerous a drug as santonin. So long, however, as the laws do not prohibit this the least a manufacturer with any decent regard for public health and safety can do is specifically to warn the purchasing public that the preparation contains a dangerous drug.

A Panacea.—There is a salutary draught which eliminates every infirmity of the body and establishes the health. This draught you should always have by you. Its composition is as follows: Myrrhae, Feniculi, āā 3iij; Piperi, Anethi, āā 3i. Crush and mix thoroughly, and then add sufficient wine to form a paste. After this, put in a clean cloth, which should be carefully sewn up. Put this in [a mixture of] weak wine and beer and leave to mature for twenty days, or the longer the better. Then remove the cloth and drink daily a measure of the remaining wine before dinner and before supper. If you take this potion you will never ail. Beware, however, to gather and compound the herbs in a waxing moon, for if you neglect this and the moon be on the wane, the potion will be of nought avail.—Ancient Therapeutics.

Correspondence

THE ACTION OF THE HOUSE OF DELEGATES OF THE A. M. A. ON THE ALCOHOL QUESTION

To the Editor:—In THE JOURNAL, June 9, 1917, p. 1768, the following resolution appears as emanating from the Council on Health and Public Instruction:

WHEREAS, It is the unanimous opinion of the Council on Health and Public Instruction of the American Medical Association that alcohol has no drug value, either as a stimulant, as a tonic or as a therapeutic agent, and that it has no food value; and

WHEREAS, Its use as a beverage or as a therapeutic agent is detrimental rather than beneficial to the individual; therefore, be it

Resolved, That the House of Delegates of the American Medical Association, at its Sixty-Eighth Annual Session, declares it is opposed to the use of alcohol by individuals either as a medicine or as a beverage; and be it further

Resolved, That its use in medicine is permissible only in the preparation and preservation of pharmaceutical products.

I wish to register a protest against this council dealing with a matter which is outside of its sphere and which belongs to the Council on Pharmacy and Chemistry, which deals with matters therapeutic. The House of Delegates did not pass these resolutions but substituted:

WHEREAS, We believe that the use of alcohol as a beverage is detrimental to the human economy, and

WHEREAS, Its use in therapeutics, as a tonic or a stimulant or as a food has no scientific basis, therefore be it

Resolved, That the American Medical Association opposes the use of alcohol as a beverage, and be it further

Resolved, That the use of alcohol as a therapeutic agent should be discouraged.

And defeated the following safe and sane resolution:

The Section on Pharmacology and Therapeutics instructs its delegates to the House of Delegates that it is the sense of this section that the question of the therapeutic value of alcohol which has been long in dispute remains yet undetermined, and that hasty action taken in the stress of present circumstances would not be wise, and would not reflect fully the best therapeutic and pharmacologic opinions.

Furthermore, while recognizing the possible need of prohibition of the use of alcohol as a measure of public safety, it would ask that the two questions be considered separately on their respective merits.

I wish still more to protest the action of the House of Delegates, although I am conscious that this protest may be considered bold. With the great question of "prohibition," or the social questions involved, it may be the province of this council or of the House of Delegates to deal; but there is a great difference between the action of alcohol taken when it is needed and its action taken when it is not needed. My protest, moreover is based on the fact that such resolutions are hasty and do not represent careful consideration of the medical facts, and, furthermore, because I do not think that the House of Delegates has a right to pass dogmatic resolutions which differ absolutely from what thousands of members of the Association believe to be true. Such resolutions put in jeopardy any medical man who may prescribe alcohol with the honest belief that it does good in certain states of disease. His standing in court with this resolution presented to the jury might readily be impaired if grief-stricken friends should sue him on the ground that he had used a harmful drug. It may be proper for the House of Delegates to express its belief that alcohol is abused as a medicine, but to say that its use in therapeutics as a tonic, or stimulant, or as a food has no scientific basis is not only unwise, but, in the opinion of many eminent medical men, untrue and not supported by the majority of evidence. Space does not permit of quotations, but it may not be out of place to quote from the last edition of Sollmann's "Manual of Pharmacology," particularly as Dr. Sollmann is an active member of the Committee on Pharmacy and Chemistry. On page 547, he says of alcohol:

Its usefulness as a quickly acting stimulant can scarcely be doubted in the various forms of sudden circulatory collapse—syncope, exhaustion, hemorrhage, traumatic shock, snake venom, strychnin, aconite, veratrum poisoning.

And he recommends a dose of approximately 1 ounce of whisky or brandy, preferably hot, repeated every ten or fifteen minutes according to effect. On the same page he says:

The vasodilator effect may be useful in angina pectoris, and in chronic lesions of the heart small doses may be valuable to lessen the worries of the patient.

As to its value as a food, Sollmann says in discussing exhausting fevers:

"The beneficial effects are probably mainly nutrient, due to the direct *food-value of the alcohol* [italics his], and to the stimulation of the digestion and absorption of the food. The pulse becomes stronger and more regular." On page 549 he states that "if taken after exposure it prevents the tendency to congestion of internal organs," and, again, on the same page, he says "Small quantities of alcohol, taken with meals, therefore, tend to have a favorable action on digestion." Finally, Sollmann states that "in chronic conditions good results might be expected in adynamic states where the circulation or tone are defective—in the course of convalescence from fevers or exhausting illnesses."

Dr. Cushny of London is the first corresponding member of the Council of Pharmacy and in his book, page 143, he says, when considering the food value of alcohol:

The final result of all these investigations is that alcohol can take the place of some of the fats in the food and leads to the same economy of protein as the ordinary non-nitrogenous constituents of the dietary.

On page 150, Cushny says:

In sudden chill with tendency to fever alcohol is often of great benefit . . . Its efficacy would seem to be due to the relief of the congestion of the internal organs by the return of the blood to the skin.

Finally, it may not be out of place to quote Dr. Abraham Jacobi of New York, a recent president of the American Medical Association, who wrote in *American Medicine* for September, 1913, that after sixty years of practice spent among the sick only, and the recovering and the dying, he advocates the free administration of alcohol in grave septic cases, and cites a case of diphtheria, in a girl of 7, who was taking half a pint a day and for whom he ordered another half pint, and, again, the case of a boy of 3 years with formidable symptoms of mixed infection to whom he gave a pint of whisky daily, and he adds the significant words that he wishes his "readers to know that no amount of whisky will produce intoxication when its effect is wanted to combat sepsis." He does not attempt to explain the effects. He adds, "Let somebody explain; meanwhile, take the hint."

The matter may, perhaps, be thus summed up: 1. Alcohol is a powerful drug and, therefore, if used carefully, capable of doing good. 2. Thousands of physicians prescribe it in illness. 3. Great care should be exercised by a body of men acting as representatives of their colleagues in condemning dogmatically what many of their colleagues believe correct. 4. Such action may jeopardize the reputation of a professional brother. If the preamble of these resolutions is allowed to stand without protest, then, Dr. Jacobi and myself, along with a host of professional brethren, may find ourselves in jail for using an agent which is "detrimental" and, therefore, a poison, and likewise be sued for civil damages as well if we prescribe alcohol.

As I write this letter I am in receipt of a communication from a body interested in "prohibition" quoting the resolution of the Council on Health and Public Instruction, and asking that a letter be written to the authorities at Washington calling attention to this resolution. Indeed, it is requested that I telegraph the President confirming it.

I take it that the chief reason for the existence of the Association is to help its members and to exercise an influence which will aid in the growth of safe and sane judgment on all matters medical. I would respectfully urge that now, of all times, is the period when medical men should help balance the community by balancing themselves, and that the resolutions already quoted are not justified. Alcohol has been much abused as a drug, as have all powerful drugs; but that it has no drug value, no food value, and is detrimental when used as a therapeutic agent, I earnestly deny.

HOBART AMORY HARE, M.D., Philadelphia.

Dr. Hare's letter was referred to the secretary of the Council on Health and Public Instruction who comments:

Dr. Hare protests against the Council on Health and Public Instruction "dealing with a matter which is outside

of its sphere." The subject was not taken up by the Council on its own initiative. At the Detroit session a memorial from the National W. C. T. U. was presented to the Association through the secretary (see minutes Detroit session, page 5), in which the Association was asked for an expression of opinion on alcohol from a social rather than a therapeutic standpoint. This communication was referred to the Reference Committee on Reports of Officers, which recommended that it be referred to the Council on Health and Public Instruction (official minutes, Detroit session, page 69). This recommendation was approved by the House. The Council's warrant for taking up this matter is that it was instructed to do so by the House of Delegates.

Dr. Hare further says, "Such resolutions put in jeopardy any medical man who may prescribe alcohol with the honest belief that it does good in certain states of disease," although he does not specify how the medical man would be put in jeopardy. There is no state in which any properly trained and legally qualified physician could be put in jeopardy under the criminal law for using any remedy which in his professional judgment was indicated. Perhaps Dr. Hare has reference to civil suits for malpractice. In such cases, it is a well established principle in law that the acts of a physician must be judged by the professional standards of knowledge and practice prevailing among physicians at the same time and place. Resolutions adopted by the American Medical Association or any other body expressing an opinion on a scientific question would not be admissible as evidence in a malpractice suit. They might possibly be utilized by an attorney in an argument before a jury, but would have only such value as the jury might attach to them. In a civil suit for damages, the extreme penalty consists in the infliction of monetary damages and costs on the defendant. Even when found guilty of malpractice physicians are not imprisoned, so that there is no danger of Dr. Hare realizing his foreboding that "Dr. Jacobi and myself along with a host of professional brethren may find ourselves in jail."

The resolutions adopted by the House of Delegates are an expression of opinion on the part of this representative body of the medical profession of the United States as to the harmfulness of alcohol, especially from a social standpoint. They are to be regarded as a statement of general principles rather than as a dogmatic, dictatorial and infallible rule to be applied to all cases without exception. They will doubtless be so considered by the majority of the members of the Association. Scientific questions are not to be settled by vote. On the other hand, such an organization as the American Medical Association has certain social duties and responsibilities which it must meet from time to time by summarizing the consensus of opinion of the medical profession to the best of its ability on those questions which have a sociological bearing. Dr. Hare need have no fear, however, that any physicians will suffer for using their best scientific knowledge and judgment in the treatment of their patients.

FREDERICK R. GREEN,
Secretary, Council on Health and Public Instruction.

MILITARY SERVICE AND LIFE INSURANCE POLICIES

To the Editor:—The question as to how service in the army will affect life insurance polices is worthy of the attention of doctors who offered their services.

I have communicated with the companies with which I carry insurance, and give the information obtained for the enlightenment of those who have not yet investigated. If contemplating joining the army or the reserve, one should at once communicate with the companies with which one is insured, in order not to invalidate one's policies through failure to comply with the requirements of the policies.

The Reliance of Pittsburgh states, "Your policies do not contain war clauses, so your engaging in military or naval service will in no way affect the validity of the contract."

The Prudential states, "Your policies contain no war restrictions; therefore, service in the army will not affect the validity of the policies in any way."

The Equitable states, "Notwithstanding the fact that your policy does not by its terms cover military or naval service in war, the society takes pleasure in advising that it has decided that no additional premium will be charged—in the service of the United States—either at home or abroad."

The New York Life states, "Your policies are absolutely free of conditions as to residence, occupation, travel, habits of life and manner, time or place of death. No permit or extra premium will be required for military or naval service in time of war or in time of peace."

The Provident Life & Trust Company states, "The Board of Directors adopted the following Resolution on Fourth month 9th, 1917, 'Resolved, That any existing restrictions as to occupation, residence, travel, or military or naval service, be and are hereby waived upon all outstanding policies which have attained their first anniversary.' You are, therefore, at liberty to enter either the military or naval service, without prejudice to your policy."

The Fidelity Mutual of Philadelphia states, "Your policies provide that in the event of your engaging in military or naval service in time of war, an extra premium is to be paid, and permit obtained from the Company—For service abroad, or naval service, we are charging an extra premium of $30 per thousand annually."

The Missouri State Life, which took over the Hartford Life, states, "The extra annual premium being charged by the company for a permit to engage in military or naval service outside the continental limits of the United States amounts to $100 per $1,000 of insurance."

These replies are of course for policies taken out before war was imminent or actually declared. All companies charge an extra premium for new policies taken out for the sole purpose of protection during actual participation in the war.

From the statements made by the various companies it follows that (1) one should communicate with one's insurance companies at once; (2) it makes a difference what companies one is insured in; (3) most insurance companies are treating their old policy holders fairly and trying to meet them more than half way.

W. SCOTT PIPER, M.D., Clearfield, Pa.

TRACHOMA A CIVIC AS WELL AS A MILITARY PROBLEM

To the Editor:—At a meeting of the Section on Ophthalmology of the American Medical Association last June, a resolution was passed requesting the government to be on the watch for cases of trachoma among voluntary and conscripted candidates for the army.[1]

To exclude victims of trachoma from the ranks is no doubt desirable, but in so doing, first, the army will lose many men who in short time (from three to six months) could be cured of trachoma and be made safe as far as contagion is concerned. Secondly, these excluded persons return to their homes, continue to live under unhygienic conditions, and cannot be kept under supervision. The fact must also be borne in mind that many of these persons are employed in factories where they disseminate trachoma among their fellow workers. In this connection, it may be interesting to recall two facts, first, that trachoma was introduced into Europe on a large scale by the soldiery, namely, the French and English soldiers returning from Egypt after the Napoleonic expedition, 1798-1801, and second, that it was disseminated among the civilian population by the discharged soldiers affected with eye diseases. At one time there were so many trachomatous soldiers in the Belgian army that the government applied to Jungken, a celebrated ophthalmologist in Berlin, for advice. He recommended that they dismiss the trachomatous soldiers to their homes. By means of this ill-advised measure trachoma soon became diffused in Belgium to an extent that has been observed in no other European state.

1. The following resolution was adopted by the Section on Ophthalmology but was not transmitted for the approval by the House of Delegates required before a resolution "shall be issued in the name of the American Medical Association."

Resolved, That the Section on Ophthalmology of the American Medical Association call the attention of the surgeons-general of the army and navy to the fact that conscripted men from regions infected with trachoma might be the source of a widespread epidemic of the disease, and that strict measures be adopted for the prevention of such a disaster.

There is, of course, no danger of such an error being made today, but at least one European country engaged in the present war—Austria—decided some time ago that the exclusion of men of military age afflicted with trachoma was inadvisable from the standpoint of helping the individuals excluded, and unnecessary from the standpoint of military prophylaxis. It was found impossible to keep such excluded men under supervision and treatment; accordingly the authorities in Austria refused to accept trachoma as excluding the patient from military service, and also placed all trachomatous patients liable to military service in military institutions under the case of special physicians, until they were completely cured, after which they were sent for military service or were dismissed, according to the age at which the cure was effected. The average length of treatment was four months, and about 80 per cent. of the patients were cured within the period of liability to military service. During the service age, the trachoma patients were given regular military training at the garrison hospital.

I respectfully suggest, therefore, that instead of excluding trachoma patients from the American army, the practice initiated by Austria be followed by us.

Exclusion of men of military age on account of trachoma from service is desirable only from one point of view, that of army prophylaxis. Acceptance of these men followed by isolation, supervision, treatment and military training would insure civilian as well as army prophylaxis, and be a gain to the army and the community, as well.

Arthur S. Tenner, M.D., New York.

MEDICAL STUDENTS AND THE DRAFT

To the Editor:—There is a question highly interesting to a considerable number of medical students who blindly followed the advice given a few months ago by the surgeon-general, namely, to stay in school, resting assured that by doing so they would be best serving their country. But the time is now very near when the draft is to be put into operation and the only attention shown the medical student, which had any authority behind it, was the vague and unsatisfactory statement of the surgeon-general published in The Journal, July 7. The medical students of this and other cities want to know exactly where they stand and want to know soon.

It would be most unjust if the government, which advised the men to stay in medical school, thus losing their chances of obtaining commissions, should draft them without at least giving them an opportunity of enlisting in their chosen branch of the service.

Can you not secure us some prompt, *definite*, and authoritative statement?

R. V. Baker, Portland, Ore.

IN AID OF BELGIAN PHYSICIANS

To the Editor:—I have received a letter from Mr. P. George Du Carpe, 9, rue Saussier Leroy, Paris, at the instance of Dr. Joseph A. Blake in reference to the following matter:

When the war is over, the doctors in Belgium and Northern France will wish to return to their offices, clinics, etc. When they do so they will find everything gone; no instruments, no means of examination of patients; in other words all office fixtures and clinical opportunities, save it may be here and there, will have disappeared.

There has been established a committee for aiding the refugees of the liberal professions, doctors, and others (Comité d'appui des réfugiés des Professions libérales) to meet this serious want. The patrons include MM. A. Ribot, president of the council; Leon Bourgeois, minister of labor, and other prominent persons. One of the vice presidents is Dr. Mauclaire of the Faculty of Medicine in Paris. The treasurer is M. Charles Halais, 15, boulevard de Latour-Maubourg, Paris.

Some of our profession certainly will desire to aid in this laudable effort to reestablish our confrères in their civil work; any such may send their gifts to the treasurer, or, if they prefer to send any such sums to me at 1729 Chestnut Street, Philadelphia, I shall be very happy indeed to forward them to the treasurer. All gifts to me will be acknowledged through the columns of The Journal.

W. W. Keen, M.D.,
1729 Chestnut Street, Philadelphia.

THE HOME HOSPITAL UNIT

To the Editor:—This age, especially in the midst of a world war, demands the greatest individual efficiency. The slaughter of human lives puts man-power at its highest value. Physicians cannot be made in a day. The nation must preserve those now qualified and use them in such manner as will render most efficient service in maintaining its greatest asset, the life and health of its citizens. It is said that with 140,000 physicians in the United States, only half that number would be acceptable for army service, even then making no provision for the care of patients at home—the man left without his physician at a time when disease runs rampant amid the turmoil of war.

It becomes necessary, first, to organize the medical service at home; secondly, to systematize its work, and thirdly, to relieve the strain on the physician himself. This brings to us the remedy—the home hospital unit.

1. A hospital is organized in each community, located where it will be accessible to the most people, built on the plan of modern hospitals with private rooms, wards, outpatient department, etc., one or more physicians on its staff, a graduate trained nurse in charge of the nursing with assistants which she herself can train, and managed by a board of directors (three men and two women) in the same community, the physician in charge being ex officio chairman of this board. The hospital, of course, must have an ambulance.

2. Certain hours are established for physicians, rounds, operating, laboratory work, etc., and likewise for the various routine duties of the nurses. There are separate wards for obstetrics, diarrheal diseases of infants, typhoid fever, pneumonia, tuberculosis, nephritis, etc., with routine treatment of each when possible. Certain limited hours for visitors are prescribed.

3. The physician in charge no longer has to travel to see his patient; the patient himself goes where he can be best treated. The physician's time is consumed in doing that which he alone as a physician is qualified to do. Men can be trained to run ambulances in a day, but it takes four years to make a physician. This and many years of experience are not to be whitted away in idle gossip at the bedside or by exposure in bad weather over rough roads. Give him organized help, trained to nurse the sick in a house built for sick people and where remedies are at hand at a moment's notice. Remove the patient from his insanitary home and surroundings, at least till he recovers, then instruct him in the origin of his illness, how to continue well, how to render his surroundings healthy; printed pamphlets can be handed him on leaving the hospital.

This home hospital unit will outlive this and many wars. The standards of medical schools can continue their advancement, physicians can become fewer, mercenary men can seek other channels of adventure, and the health of the nation will be provided for.

Theodore E. Wannamaker, Jr., M.D., Cheraw, S. C.

Philadelphia Regulates Junk Shops.—The junk shop regulation bill has been passed by both houses of the legislature and approved by Governor Brumbaugh. This action is looked on as a distinct forward step toward better protection of the public health and also a further means of preventing fire and reducing crime. Under the regulations of this bill the location and operation of all junk shops will be controlled. The provision and introduction of this bill had the full support of the local health department and hereafter all junk dealers will be required to obtain from the division of housing and sanitation of the department of health, a permit for the location and conduct of a shop and all junk shops must be carried on in strict compliance with the rules of the bureau of health.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

QUESTIONS ON PREVENTIVE MEDICINE AND HYGIENE

To the Editor:—Kindly answer the following question that was asked in an examination held for health officer: Define (1) disinfection, (2) sterilization, (3) immunity, (4) death rate, (5) morbidity rate, (6) case fatality rate, (7) virus, (8) Schick test, (9) flash, (10) Mills-Reincke phenomenon, (11) Hazen's theorem. Please omit my name.

F. R. G.

ANSWER.—1. Disinfection means the destruction of the pathogenic micro-organisms which cause infection. 2. Sterilization means the destruction of all the lower forms of animal and vegetable life that may be in or on an object. 3. Immunity is the power which living organisms possess to resist and overcome infection. 4. The death rate is the ratio of the total number of deaths in a community to the population, usually figured in terms of number of deaths per thousand, ten thousand or hundred thousand. 5. The morbidity rate is the proportion of cases of a given disease occurring during the year per thousand, ten thousand or hundred thousand of population. 6. The case fatality rate is the percentage of cases of sickness which terminate fatally. 7. Virus is the toxin of an infectious disease. 8. The Schick test is the injection into the skin of $\frac{1}{50}$ of a minimal lethal dose of diphtheria toxin for a 250 gram guinea-pig. A positive reaction, which is the development of a reddened area with a white center at the site at which the toxin was injected into the skin, means the absence of antitoxin or susceptibility of diphtheria. A negative reaction means the presence of antitoxin or immunity. 9. The flash method refers to that method of pasteurizing milk whereby the milk is brought up to a temperature of 178 F. and chilled at once. This method is no longer approved by sanitarians, since it is not entirely reliable and does not give uniform results. The holding method, in which the milk is heated to 65 C. and kept at that temperature for from thirty to forty-five minutes, is more reliable. 10. The Mills-Reincke phenomenon relates to the marked decrease in the general death rate following filtration of the water supply. It was observed in Lawrence, Mass., in September, 1893, by Mr. Hiram F. Mills, and in Hamburg, Germany, in May, 1893, by Dr. J. J. Reincke. The name "Mills-Reincke phenomenon" was given by Sedgwick and McNutt in 1910. 11. Mr. Allen Hazen, a sanitary engineer, said in 1904 that "where one death from typhoid fever has been avoided by the use of a better water, a certain number of deaths, probably two or three, from other causes have been avoided." Hazen's theory is a formula for a numerical expression of the comparative effect of water purification on typhoid fever mortality and total mortality. It is not a precise mathematical statement.

The answers to practically all of the questions may be found in any of the modern textbooks on preventive medicine and hygiene.

DANGERS OF OPERATING THE ROENTGEN RAY

To the Editor:—I should like information as to the effect of the Roentgen ray on the generative organs. 1. Is the ordinary, unprotected operator of the Roentgen ray exposed to sterilization? 2. Has it been used as a means of sterilization in asylums, and what is the procedure? 3. Are three layers of lead foil an efficient protecting screen?

WILLIAM F. SHAW, M.D., Campbell River, B. C.

ANSWER.—1. It has been shown that the testicles are extremely susceptible to the Roentgen ray, and to avoid sterilization they should be protected from exposure. As to whether the unprotected operator is exposed to sterilization depends altogether on how much he is exposed to the Roentgen ray. In the ordinary use of the Roentgen ray, under conditions that are safe in general for the operator, there is no danger of sterilization.

2. The use of the Roentgen ray for sterilizing the insane or criminals has, of course, occurred to many persons, but we do not know of any practical application of it for this purpose in institutions.

3. Three layers of ordinary thin lead foil are not an efficient protection against powerful Roentgen rays.

Medical Education and State Boards of Registration

New York January Examination

Mr. H. H. Horner, director, Examinations and Inspections Division, reports the written examination held at Albany, Buffalo, New York and Syracuse, Jan. 29 to Feb. 2, 1917. The examination covered 8 subjects and included 80 questions. The percentage required to pass was 75. Of the 150 candidates examined, 116 passed, including 5 osteopaths, and 34 failed, including 1 osteopath.

Mr. Horner also reports that from Jan. 1 to May 1, 1917, 12 candidates were licensed through reciprocity, 3 through reregistration, 2 through the endorsement of credentials, 1 on recommendation of the state board, and 2 because of eminence and authority in the medical profession. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Licensed
Yale University	(1914)	1
Northwestern University	(1911)	1
Rush Medical College	(1916)	1
University of Louisville	(1912)	2
College of Physicians and Surgeons, Baltimore	(1914)	1
Johns Hopkins University	(1913) (1914, 2)	4
University of Maryland	(1916)	2
Harvard University	(1907) (1916)	2
Tufts College	(1909)	1
University of Michigan Medical School	(1909) (1914)	2
Albany Med. Coll.	(1910) (1911) (1914) (1915, 5) (1916, 2)	10
Columbia University	(1914, 3) (1915, 3) (1916, 4)	10
Cornell University	(1915) (1916, 4)	5
Fordham University	(1913) (1914) (1915, 3) (1916, 7)	12
Long Island College Hospital	(1916)	4
New York Homeopathic Medical College and Flower Hospital	(1914, 2) (1915, 3) (1916, 11)	16
New York Medical College and Hospital for Women	(1915) (1916, 3)	4
Syracuse University	(1916)	1
University and Bellevue Hospital Medical College	(1914) (1915, 4) (1916, 2)	7
University of Buffalo	(1913) (1916, 2)	3
University of Oklahoma	(1916)	1
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1916)	1
Jefferson Med. Coll. of Philadelphia	(1915, 2) (1916)	3
Medico-Chirurgical Coll. of Philadelphia	(1915, 2) (1916)	3
University of Pennsylvania	(1912) (1915, 2)	3
Med. Coll. of the State of South Carolina	(1903)	1
Vanderbilt University	(1914) (1915)	2
University of Vermont	(1915)	1
Medical College of Virginia	(1914) (1916)	2
Queen's University	(1911) (1915)	2
University of Brussels	(1913)	1
National University, Athens	(1911)	1
University of Turin	(1914)	1

FAILED

Leland Stanford Junior University	(1916)	1
George Washington University	(1916)	1
Howard University	(1916)	1
University of Georgia	(1916)	1
University of Maryland	(1912) (1916)	2
Boston University	(1912)	1
Tufts Medical School	(1912) (1915, 2)	3
Columbia University	(1914) (1915) (1916)	3
Fordham University	(1916)	1
New York Homeopathic Medical College and Flower Hospital	(1914) (1915, 2) (1916, 4)	7
University and Bellevue Hospital Medical College	(1915)	1
Hahnemann Med. Coll. and Hosp. of Phila.	(1915) (1916)	2
Jefferson Medical College of Philadelphia	(1904)	1
Medico-Chirurgical Coll. of Philadelphia	(1911) (1916)	2
Medical College of Virginia	(1915)	1
Queen's University	(1911) (1916)	2
University of Catania	(1912)	1
University of Naples	(1899) (1909)	2

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Yale University	(1913)	New Jersey
George Washington University	(1915)	Wisconsin
Cornell University	(1914)	Wisconsin
N. Y. Homeo. Med. Coll. & Flower Hosp.	(1913) (1916)	New Jersey
University of Cincinnati	(1915)	Ohio
Univ. of Penna.	(1905) New Jersey; (1910) Ohio; (1914)	Ohio
Medical College of Virginia	(1912) (1915)	Virginia
University of Virginia	(1912)	Virginia

Minnesota April Examination

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, April 3-5, 1917. The examination covered 16 subjects and included 80 questions. The percentage required to pass was 75. Eight candidates were examined, all of whom passed. Nineteen candidates

were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College	(1916) 82, 90, 93.		
Kentucky School of Medicine		(1902)	77
University of Minnesota	(1916) 89;	(1917)	88, 90
National University, Athens		(1905)	81

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado		(1914)	Colorado
College of Phys. and Surgs., Chicago	(1893) Nevada;	(1908)	Iowa
Illinois Medical College		(1903)	Illinois
Northwestern University	....(1911) (1914) (1915)	(1916)	Illinois
University of Illinois		(1915)	Iowa
State University of Iowa Coll. of Med.	....(1905)	(1914)	Iowa
University of Louisville		(1911)	Wyoming
Boston University		(1903)	Illinois
John A. Creighton Medical College		(1916)	Nebraska
Omaha Medical College		(1896)	Nebraska
University of Nebraska		(1904)	Nebraska
N. Y. Homeopathic Med. College and Flower Hosp.		(1910)	N. Dakota
University of Virginia		(1907)	Virginia
Marquette University		(1916)	Wisconsin

Book Notices

STATE SANITATION: A REVIEW OF THE WORK OF THE MASSACHUSETTS STATE BOARD OF HEALTH. By George Chandler Whipple, Professor of Sanitary Engineering in Harvard University and the Massachusetts Institute of Technology. Volume 1. Cloth. Price, $2.50. Pp. 377, with illustrations. Cambridge: Harvard University Press, 1917.

Dr. Whipple's review of the work of the Massachusetts State Board of Health will be read with profit by those interested in preventive medicine. Chapter 1 on the early history of public health in Massachusetts has all the fascination of a story. The reader learns, with the delight of meeting an old friend, that Paul Revere, the well known "rider" of whom he read and recited in his school boy days, was the chairman of the first board of health of Boston. Feb. 13, 1799, the people of Boston elected a board of health, and, March 9, the board organized by electing Paul Revere as president and Mr. John W. Folsom as secretary. Various health ordinances, either in the colony or in the town, had already been enacted, usually following some epidemic; but this was the first official health board to be organized. Among the rules and regulations promulgated by this board was one forbidding the sale or having in one's possession within the city of Boston any oysters from June 1 until September 1. Dr. Whipple records many other interesting incidents, such as the introduction of vaccination in 1800 by Dr. Waterhouse, the construction of the first water system consisting of bored logs joined together with lead, the development of the sewerage system, the filling in of waste and submerged land, the discovery of ether as an anesthetic, and the development of city markets, of which the old Faneuil Hall Market is the best known. The story of the work of Lemuel Shattuck is graphically and interestingly told, while the reading of the report of the first sanitary commission, made in 1850, is suggestive, even at the present state of sanitary development. Chapters 2, 3 and 4 deal with the history, development and various forms of the state board of health. Other chapters discuss the antitoxin and vaccine laboratories, protection of food and water supplies, the Lawrence Experiment Station and the water and sewage laboratories, the cost and achievements of the state board of health, and the present system of organization of the department of health of the state. Chapter 13 consists of biographic sketches of various prominent men who have at various times been connected with the board.

ADVICE TO WOMEN ON THE CARE OF THE HEALTH BEFORE, DURING AND AFTER CONFINEMENT. With Hints on the Care of the New-Born Infant and an Appendix on What to Get Ready for a Baby. By Florence Stacpoole, Diplomée of the London Obstetrical Society. Revised from the Fifth London Edition to Conform to American Practice by Lydia E. Anderson, R. N., President of State Board of Nurse Examiners, University of State of New York. Cloth. Price, $1.25 net. Pp. 265. New York: Funk & Wagnalls Company, 1917.

This is one of the numerous books of advice to women so many of which have been published in the last few years. This one is well arranged and well written, and can be safely recommended.

Medicolegal

An Expert on Insanity Testifying as to Indications of Handwriting

(Raymond et al. vs. Flint et al. (Mass.), 114 N. E. R. 811)

The Supreme Judicial Court of Massachusetts, in this suit by an administrator and others to set aside a deed, etc., made by a Mrs. Dow, says that the superintendent of the Danvers State Hospital, after examining specimens of Mrs. Dow's handwriting, stated that they indicated a person advanced in years, an arteriosclerotic, or senile person, "by reason of the palsied writing and tremor which is characteristic of that period of life." The court sees nothing objectionable in this evidence. The opinion of an expert on insanity, although not an expert in handwriting, was admissible for the purpose of explaining Mrs. Dow's mental or physical condition. The peculiar characteristics of the handwriting may have been known to the witness, and it may have been the handwriting of such a person as he described.

Construction of Statute with Reference to Compulsory Vaccination of Schoolchildren

(Herbert vs. Demopolis School Board of Education (Ala.), 73 So. R. 321)

The Supreme Court of Alabama, denying a rehearing, affirms an order denying a writ of mandamus to compel the reception of an unvaccinated child into the Demopolis district public school after the municipality of Demopolis had enacted an ordinance providing that "no child shall enter any of the public schools of Demopolis who has not been vaccinated." The court says that, in defining the powers, etc., conferred on municipalities, Section 1289 of the code provides: "To adopt all necessary ordinances and enforce the same to prevent the introduction or spread of contagious, infectious, or pestilential diseases in the cities or towns, and to that end may provide for a system of compulsory vaccination and enforcement of the same." That statute is a particular expression of the police power of the state; and as such, in the preservation of the health of the people, there can be no real doubt of its constitutional validity, even though its effect is to commit to the municipal authorities a measure of discretion with respect to the circumstances under which the power thus delegated shall be made effective. The legislature avowed its conclusive judgment that the major end in view would be subserved by a system of compulsory vaccination, thus avoiding the application of the general doctrine illustrated in the decisions cited on the briefs for the appellant (petitioner), where the pronouncements were predicated of the absence of a legislative specification that compulsory vaccination was within the contemplation of the legislature when it wrote the general authorization under which the subordinate administrative agents sought to establish compusory vaccination within their jurisdictions. Where the proper authority has so enacted, the regulation that vaccination is a condition precedent to the attendance of children on schools in their communities is a valid exercise of the police power for the prevention of disease and the preservation of the health. The right or privilege assured by the provision of the code that "every minor over the age of seven years shall be entitled to admission into, and instruction in any public school of his or her own race or color in this state" is subject to reasonable regulation, with respect to its enjoyment, by constituted authority on which is imposed by law of coincident dignity the obligation to guard and to preserve the health not only of schoolchildren but of all others within their jurisdictions who may be affected in consequence of the association and congregation of children in the schools of the community. The authority delegated to the municipalities of the state by statute (Section 1289) is to provide a system of compulsory vaccination. The power conferred is to require vaccination without regard to the will or wishes of the persons subject to the government or control of the municipalities. The method whereby this power may be made effective, as a least one of the means to prevent the "introduction or

spread" of smallpox, is committed to the discretion, reasonably exercised, of the municipality. If it be assumed, to the petitioner's advantage, that the quoted provision of the ordinance was all of the regulations the municipality had sought to establish touching the subject of smallpox and vaccination to prevent its introduction or its spread in Demopolis, it could not be pronounced void because its effect was alone visited on children eligible to attend the public schools therein. As a matter of classification for legislative purposes, the regular congregation of numbers of children in public school buildings and on playgrounds usually provided about these schools necessarily constitutes a condition different, with respect to hygienic circumstances, effects, and results, from that to be found in any other character of assemblage in a municipality. These differences, justifying regulatory classification, are suggested by the varying degrees of sanitary conditions prevailing in the homes of the pupils, and by the circumstances of association and contact ordinarily present among pupils in such schools. It is difficult to conceive of a higher obligation on municipal authorities, when sufficiently empowered, than to preserve and to conserve the health of pupils in their schools.

Taking Injured Seaman to Other than Marine Surgeon

(The C. S. Holmes (U. S.), 237 Fed. R. 785)

The United States Circuit Court of Appeals, Ninth Circuit, reverses a decree so far as it denied the libelant, one Fondahn, damages for an alleged failure to furnish him proper medical and surgical treatment. The court says that at about 6 o'clock one afternoon, when the schooner *C. S. Holmes* was about 10 miles off Cape Flattery on her way to sea, Fondahn, a sailor on the schooner, received a compound fracture of the right arm. The injury was very serious, the periosteum was torn, and bones protruded from a ragged wound. The arm was dressed by the master and sailors, and the master put the vessel about and sailed back toward Port Angeles, and with the aid of a tug, which was procured on the way, arrived at Port Angeles at about 3 o'clock the next morning. Thereupon sail was lowered and all hands went to bed. Early in the morning the master inquired for a physician, and was referred to one, by whom Fondahn was taken in charge, being taken to a hospital owned by the physician. About 8 o'clock that morning the arm was dressed. Seven days later Fondahn went to the Port Townsend Marine Hospital. While in change of the physician at Port Angeles, the arm began to fester, and it later developed that the bones had not been in apposition and that they did not unite. At the marine hospital an operation was performed, and Lane plates were applied, but no cure was affected. The evidence was that a further operation would be necessary, and that a cure was doubtful, if not impossible. It was Fondahn's contention that the master was negligent in taking him to a physician at Port Angeles, and in not taking him to the one at the marine hospital at Port Townsend. This was opposed by the contention that the master's duty was to take him to the nearest point where medical attention could be obtained, and that by so doing he discharged the vessel from further obligation, which seems to have been the opinion of the district court. But the court of appeals is unable to agree with the court below that the master of the *C. S. Holmes* was guilty of no negligence in his treatment of Fondahn after the latter received the injury. It thinks it was the obvious duty of the master to take him to the marine hospital at Port Townsend. That was the only marine hospital on Puget Sound. Although there were marine physicians at other points, there was none at Port Angeles, and the court does not think the master of the *C. S. Holmes* was candid in stating that he thought there was one there. Moreover, the court was convinced by the evidence that the reason the master denied Fondahn's request that he be taken to Port Townsend, which was but 20 miles away, was that it would cost him $100 more; that the master, owning an interest in the vessel, was controlled by a desire to reduce the expense as far as possible, and that his motives were further indicated by the fact that he gave the Port Angeles physician, when he left Fondahn in his charge, a permit authorizing Fondahn to receive medical treatment at the hands of a marine physician, he well knowing that the physician was not a marine one, and that the permit was valueless to him for any purpose. The court is convinced that the injury was aggravated by the manner in which it was treated at Port Angeles, that Fondahn's pain and suffering were greatly increased, and that for the negligence of the master Fondahn should be awarded damages in the sum of at least $500.

Social Medicine, Medical Economics and Miscellany

Report of Soldiers Returned as Cases of "Disordered Action of the Heart" (D. A. H.) or "Valvular Disease of the Heart" (V. D. H.)

This report, known as National Health Insurance, Special Report Series No. 8, Medical Research Committee, opens with an introduction by the committee describing the organization of the Hampstead Military Hospital lent by the committee in 1914 to the Army Council. This hospital has been devoted to the study and treatment of soldiers invalided home because of heart affections. It has been directed by Dr. Thomas Lewis, assisted by members of the Royal Army Medical Corps and the Canadian Army Medical Corps, together with volunteers from the United States. Sir Clifford Allbutt, Sir James Mackenzie and Sir William Osler have acted as an advisory committee. The hospital was situated in hilly ground, with access to open country, and the surroundings and charm of the hospital have been a considerable factor in its usefulness. The committee presents the scientific report of sixty-three pages by Dr. Thomas Lewis, setting forth the important information gained, and especially practical conclusions as to prognosis and treatment which have proved of great value.

The report is based on an exhaustive study of approximately 1,000 soldiers returned as sick during training or on active service, for actual or supposed defects of the cardiovascular system. Of these, 600 displayed a particular group of symptoms which are the actual basis of the report. This group of symptoms, for purposes of convenience, Dr. Lewis calls the effort syndrome. He lays great stress on the use of this term rather than the official diagnostic category current in the British Army, "disordered action of the heart," because the soldiers are led by the latter to the belief that they are affected with serious disease of the heart, and this belief becomes a bar to recovery. In addition, a number of the patients studied, although they presented no trustworthy signs of structural disease, had been returned with the diagnosis, "valvular disease of the heart." He urges the substitution of the term "effort syndrome," which does not affirm a theory of the pathology of the condition when soldiers are invalided home because of the following symptoms: breathlessness, pain, exhaustion, giddiness, fainting, with palpitation, headache, lassitude, coldness or sweating of the hands and feet, irritability, sleeplessness, inability to fix the attention, shakiness, or flushing.

The physical signs on examination have been: increased heart-rate, either constant or exaggerated in response to effort, posture and emotion; an exaggerated response of the blood pressure to emotion and effort; diffusion of the apex-beat, with forcible or jerky impulse; accentuation of the heart-sounds; intermittence of the heart, or respiratory irregularity. Occasional slight elevations of temperature have been common; the rate of respiration has been exaggerated after exercise, sometimes at rest; coldness, blueness, and wetness of the palms or soles is frequent; tremor of the hands is the rule, and the deep reflexes are generally exaggerated. The urine is hyperacid, usually deposits phosphates and calcium oxalate crystals; spermatozoa are common; urea is reduced, and many of the urines give a green reduction with Fehling's solution. The leukocyte count is increased, especially when patients are exercising, the increase affecting mainly the lymphocytes. Certain changes in the chemical composition of the blood have been ascertained.

Many of the patients have been said to have neurasthenia. The symptoms are, of course, many of them neurasthenic symptoms, but the diagnosis does not add to pathologic insight in Dr. Lewis' opinion. He objects equally to the terms "heart-strain" and "irritable heart" or "soldier's or athlete's heart."

There follows an interesting discussion of what he considers the best method of sorting military patients suffering from cardiac derangements. He advocates the following method by two stages:

A. Preliminary sorting. By this he would eliminate two groups: (*a*) Those with frank pulmonary tuberculosis or exophthalmic goiter. (*b*) Those with unmistakable signs of heart disease: mitral stenosis, aortic regurgitation, aneurysm, definite enlargement or grave irregularity (auricular fibrillation or flutter).

He believes that auscultation is the least valuable method of differentiation, and would wholly neglect systolic murmurs and such irregularities as intermittence or extrasystoles. This preliminary sorting would leave a group to be dealt with in a totally different way.

B. Second sorting (quick method). By this he would eliminate as unfit for any active duty:

1. Those in whom the onset of symptoms dates from rheumatic fever, or in whom there has been recurrent rheumatic fever.

2. Those in whom breathlessness on exertion has been tested objectively and is found to be persistently severe.

3. Those in whom precordial pain repeatedly prevents exercise, the patients manifesting hyperalgesia of the cardiac skin areas.

4. Those in whom the heart-rate is persistently high (120 and over) even in recumbency.

5. Those in whom a single exercise test, i. e., walking a flight of thirty steps, produces objective signs of distress, namely, an anxious expression, a respiratory rate of thirty-five or over which persists while the patient lies and is from time to time interrogated, or a pulse-rate which fails to fall within five beats of the pre-exercise level on lying for two minutes.

6. In addition it may be said that of those in whom the symptoms are of moderate severity but of many years' duration, only a very small percentage become fit for full duty categories. The class includes a number of soldiers who gave up games at school or who left heavy work in civil life on account of symptoms.

C. Second sorting (by graduated exercise).

All the men not promptly eliminated by the foregoing are then placed on exercise selected from the code of army exercises and already familiar to the men. They are carried out under a sergeant major instructor. The exercises begin with fifteen minutes of light exercises and increase by seven gradations to thirty minutes of hard exercise, eventually combined with marches of four or more miles, first without pack, then with pack, finally in full marching order.

These exercises are not merely useful in sorting the patients, but have become the essential method for their treatment. This is the most important practical outcome of the work. The patients gradually group themselves according to the highest grades of exercise which are borne without distress, and, in the eventual estimation of the fitness of the man for duty, this is the final test. Men who progress to the highest exercises and carry them out without distress for several weeks in conjunction with route marches become capable of full military duty. Those who show continued symptoms on lower grade exercises are discharged as permanently unfit. The intermediate patients are now put into light and sedentary duty classes. Since the introduction of this system, approximately 50 per cent. of the men who were not eliminated by the first sorting were returned to duty, half of them to full duty. Of 220 such discharged patients, 182 were still fit for duty three months later. By it, in addition, the average length of stay in hospital has been reduced from five and a half months to two months.

Rest in bed has proved harmful in all cases except those with severe precordial pain, severe headache, or severe giddiness. Digitalis has been without influence; bromid may be of service in the initial stages. Tobacco has tended to increase the symptoms. The removal of local foci of infection, such as carious teeth, infected tonsils, or a chronically inflammed appendix, has been followed by conspicuous improvement in some cases. Where the symptoms have followed a febrile infection, exercise treatment has been proceeded with slowly and cautiously.

Part 2 of the report deals with detailed studies of the individual symptoms by different members of the staff. The carbon dioxid of the alveolar air in these patients was at the lower limit of normal as contrasted with the high carbon dioxid of patients with cardiac failure. Carbon dioxid tolerance was also apparently low. Pain was complained of by three fourths of the patients, of various characters from uneasiness to an actual ache, more rarely stabbing pain over the precordium. Hyperalgesia of the left chest was studied in a hundred cases, and was present in some degree in forty-eight, especially in those with a history of rheumatic fever or recent infection. In cases with severe radiating pain, the distribution was similar to that in angina pectoris. The cases with hyperalgesia responded much less satisfactorily to treatment, and it was an important sign in estimating subsequent capacity for duty. Palpitation was very frequent and had no prognostic significance, the associated pulse rate being the only thing of importance. The return of the pulse rate to normal after effort was slower the more marked the symptoms produced by the effort, and was quite regularly more protracted than in normal individuals.

There follow reports of pharmacodynamic tests, also reports on studies of the different signs, drawing attention especially to the lack of value of systolic murmurs for diagnosis or prognosis. Attention is called to the lack of correspondence between the force and diffusion of the apex-beat and the size of the heart as measured orthodiagraphically. Of special interest is the fact that the average size of the heart in these patients was less than the average normal. The diffusion of the apex-beat is therefore attributed to a more vigorous movement of the heart. Dilatation of the heart as a result of exercise was not seen in a single case. Electrocardiographic studies threw no light whatever on the condition. Details of the leukocyte counts and of the urinary studies are also given. Various factors in the patients' histories are then tabulated and studied with reference to possible etiology. Soldiers invalided from active service showed more favorable results than those invalided during training. When the disability was of long duration, but relatively mild, a large percentage did well during active service; but if their condition changed for the worse, recovery was slower and more unsatisfactory than in those in whom the symptoms had developed recently. The study of occupations showed that the incidence was very much higher in men recruited from sedentary or light occupations. Rheumatic fever or chorea had existed in 23 per cent. of the cases, and only 32 per cent. of these rheumatic patients returned to duty after treatment, as against 54 per cent. of the nonrheumatic, the figures being still more striking when those returned to light duty are subtracted. Infection played a considerable part in the clinical histories. In addition to the rheumatic infections, dysentery, typhoid fever, diarrhea, pulmonary infections, etc., were immediately followed by the symptoms in 33 per cent. of the patients. A number more had chronic infections or had had a less recent acute illness. The effect of an intercurrent infection has regularly been bad. Shell shock, wounds, and other accidents, and "gassing," do not appear to have played any important part in the production of the syndrome. Strain appears to have acted merely to bring out the symptoms, rather than as the true cause of the malady. The relation to tobacco is not clear. The relation to alcohol was of considerable interest, since 53 per cent. were total abstainers, and heavy drinking was unusual. It is possible that alcohol was avoided because it aggravated the symptoms.

Various hypotheses are discussed under general pathology, but no conclusions would seem to be warranted. Vagal tone was judged normal from the effects of atropin; the accelerator response was apparently exaggerated. No evidence was found for the assumption that hyperthyroidism is the cause, and no certain proof of myocardial disease could be obtained. Bacteremia was not demonstrated. The hypothesis of toxemia is discussed without any conclusions being reached.

Society Proceedings

COMING MEETINGS

Michigan State Medical Society, Battle Creek, Sept. 4-6.
Western Roentgen Society, Kansas City, Mo., July 20-21.

AMERICAN PEDIATRIC SOCIETY

Twenty-Ninth Annual Meeting, held at White Sulphur Springs, W. Va., May 28-30, 1917

(*Continued from page 148*)

The Salts in Green Vegetables and the Effect of Different Methods of Cooking

DR. FREDERIC H. BARTLETT, New York: The feeding of green vegetables to young infants is becoming a common practice. The plan has been followed with infants as young as 6 or 7 months. Infants thus fed have shown an earlier closure of the fontanel and generally greater activity than those fed without such additions to their diet. This beneficial effect has been variously explained as due to the mere addition of an increased quantity of salts, to the particular combinations of the bases with the inorganic and organic acids present which provide the salts in an especially suitable form for use by the organism, and to a so-called vitamin effect. The general opinion is that the mineral content is the important factor. We undertook an analysis of cooked vegetables, considering separately the solid portion ordinarily given as food and the water used in cooking. We estimated the content in grams of solids of vegetables prepared by boiling, taking spinach, New Zealand spinach, young carrots, onions, string beans, asparagus and potatoes, and estimated the solids, ash, calcium, magnesium, phosphorus, potassium, sodium, sulphuric acid and iron, and also the total nitrogen and the nitrogen as protein. We also estimated the percentage lost in the water under ordinary boiling and that lost by steaming, and we estimated the contents in grams of vegetables prepared by steaming, and the approximate content of one tablespoonful of steamed vegetables of the various constituents. We found that a large proportion of the mineral content of most vegetables is lost by boiling. Calcium is the only constituent which is not affected by boiling. This loss is only slightly reduced by making the time of boiling a minimum. A great saving in the mineral content may be effected by steaming. Spinach is the best vegetable to provide a salt addition to the diet, because the loss by steaming is about one half what it is by boiling. Sodium is lost in a high degree even in steaming. One hundred gm. of the edible portion of uncooked vegetable when cooked yields approximately 3 tablespoonfuls of all vegetables, except carrots, which yield about 4.

DISCUSSION

DR. GODFREY R. PISEK, New York: Frequently young infants do not like vegetables. How do you get infants to eat the vegetables?

DR. J. P. SEDGWICK, Minneapolis: Josephine Barry, of the Department of Economics of the University of Minnesota, has made a study of the retention of salts in vegetables with different methods of cooking. She has shown the necessity of retaining these salts. Her work, however, is not as complete as that of Dr. Bartlett. We have been trying to find the amount of calcium necessary to produce a calcium retention. We find that an enormous amount is required, and that the amounts usually given therapeutically are insufficient. We gave 5 gm. in twenty-four hours during the first year, and found that if we used 3 gm. we did not get as good results. It takes twice as much calcium lactate as calcium chlorid to obtain the same results.

DR. L. EMMETT HOLT, New York: Careful attention should be paid to the minute subdivision of all vegetables fed to infants, as vegetables are in the nature of a foreign substance in the digestive tract of young infants. If the vegetables are rubbed through a fine sieve, the difficulty caused by undigested particles may be avoided. We are doing this in the Babies' Hospital, and it is suprising how little effect vegetables prepared in this way have on the infant's stools. One point that cannot be emphasized too often is that it is a mistake to allow a child to have the bottle until 2 years of age. In such children we encounter some of the worst types of malnutrition.

DR. FRITZ B. TALBOT, Boston: Have you made an analysis of Swiss chard?

DR. PERCIVAL J. EATON, Pittsburgh: The water in which vegetables have been cooked may be added to bean or pea soup or used as the foundation of a soup, and the mineral salts may thus be conserved.

DR. ROWLAND G. FREEMAN, New York: I have found that children with poor digestive capacity do not digest vegetables well.

DR. PERCIVAL J. EATON: I wish to emphasize what Dr. Holt has said with reference to sieving the vegetables. We sieve all vegetables fed to children until the children are old enough to be trusted to chew their food. If one sees that this is done, children will have no trouble in digesting vegetables.

DR. ISAAC A. ABT, Chicago: We are using a mill with two closely adjusted plates that effectually pulverizes vegetables and other foods.

DR. HENRY HEIMAN, New York: I have had somewhat the same experience as Dr. Freeman. We must not lose sight of the fact that we may have unsplit carbohydrates as well as unsplit proteins. Our experience has taught us the necessity of feeding babies green vegetables as soon as possible. This is not alone for the iron contained in the vegetables but because they furnish other elements which are required for the growth of bone and other tissues.

DR. DAVID M. COWIE, Ann Arbor, Mich.: We have had some trouble trying to use as much spinach as we did carrots. We found that we did not get the cayenne pepper appearance in the stools if we used only 1 tablespoonful of carrot.

DR. HENRY F. HELMHOLZ, Evanston, Ill.: In a recently published article it has been shown that vegetables, dried, pulverized, and made into an emulsion, may be fed to infants 2 or 3 months old without any ill effects.

DR. FREDERIC H. BARTLETT, New York: If the vegetables are rubbed through a fine sieve they may be fed either through a bottle or with a spoon. It is a mistake to begin feeding vegetables in as large an amount as a tablespoonful. We have not made an analysis of Swiss chard.

Congenital Skin Defects

DR. ISAAC A. ABT, Chicago: The subject of this report was an infant normal at the time of birth, with the exception of two defective skin areas over each knee. The labor was normal. These areas were about 1¼ inches in diameter, symmetrical, and seemed to be, so to speak, irregularly punched out. The skin around the edges was drawn and puckered, presenting the appearance of ulcers. The base was beefy red and moist. A few small areas of this red ulcerated surface showed a yellow exudate. A whitish scar seemed to cross the ulcerated area, as though connective tissue bands indicated the beginning of a process of cicatrization. The ulcers from week to week became more cicatrized, and after five or six weeks were replaced by shiny white patches. Most writers attribute these skin defects to errors in development or to inflammatory adhesions between the external layers of the skin and the amnion. At the point at which this adhesion takes place, the growth of flat epithelium is retarded. As the liquor amnii accumulates, the so-called Simonart's bands are formed. If these bands are torn loose from the integument of the fetus, a skin defect remains.

DISCUSSION

DR. J. P. SEDGWICK, Minneapolis: Last winter we had a case of congenital defect of the scalp. I am sure we should see more of these cases if the new-born infants were turned over to the pediatrician.

Case of Hemorrhagic Disease in the New-Born Treated by Direct Transfusion

DR. J. H. MASON KNOX, Baltimore: The family history of this child was unimportant. The birth was spontaneous. The

child weighed 7 pounds, 6 ounces. I was called to see the infant when it was 2 days old, because it had vomited a considerable amount of bloody fluid. The child had no fever, and no cough, and nothing abnormal could be made out. During the examination, the child passed from 3 to 5 ounces of tarry stained material, evidently hemorrhage from the intestinal tract. Transfusion was determined on. About 50 c.c. of the mother's blood was received into 2 ounces of sodium citrate solution. With a syringe about 15 c.c. of this was introduced into the longitudinal sinus. The remainder was administered intramuscularly into the buttocks. The child was first seen at 9 a. m., and from this time until 3:30 p. m. the child passed several tarry stools, was greatly blanched, the pulse became thready, and respiration shallow. With rest the condition improved, and the following morning the child seemed better. Two drams of the mother's milk were given at 7 a. m. and repeated every two hours. The following day the baby had one hemorrhage from the bowels, probably a part of the original hemorrhage. From this time the child went on to recovery, and is at present apparently perfectly healthy.

DISCUSSION

Dr. Fritz B. Talbot, Boston: These patients frequently have a high temperature at some stage of the disease. I had one case in which there was a profuse hemorrhage under the scalp and a temperature ranging from 102 to 106 F. The child recovered. I have wondered when the hemorrhage is under the scalp or into the muscles, where it is not excreted, whether the high temperature may not be due to the absorption of the hemorrhage.

Dr. Alfred F. Hess, New York: The question is suggested in this connection, which is preferable, direct or indirect transfusion, or whether one is as good as the other. I believe that direct transfusion is the treatment of election, that it is better than citrated whole blood. I think investigations show that the citrated blood is not the same as whole blood, and that a rise in temperature occurs when citrated blood is used.

Dr. Henry F. Helmholz, Evanston, Ill.: Most of these patients will recover without direct transfusion. They can be cured by intramuscular injections of blood, which can be given in amounts up to 100 c.c.

Dr. Charles Gilmore Kerley, New York: Within half a year I have had three cases of this kind relieved by intramuscular injection. One-half ounce of blood injected into each buttock stops the bleeding just as effectually as the use of the serum by the Welch method. The fact that blood can be obtained so readily for infants and that one does not have the trouble of separating the serum makes this method a convenient as well as a satisfactory one.

Dr. L. E. La Fetra, New York: We have been giving the intramuscular injections of whole blood ever since Dr. Schloss first published his method. We have employed it in about fifty cases, making the injections into the loose tissues in the scapular region. We do not have to use large quantities of blood. It is more important that the injections be made at frequent intervals. If human serum cannot be obtained, horse serum may be used.

Dr. J. H. Mason Knox, Baltimore: The blood was injected into the vein because of the desperate condition of the child.

Enlargement of the Thymus Treated by the Roentgen Ray

Dr. Alfred Friedländer, Cincinnati: This paper is to be abstracted in The Journal, July 28, 1917.

DISCUSSION

Dr. Howard C. Carpenter, Philadelphia: There seem to be some cases in which the thymus is really enlarged in which the enlargement is not shown by the Roentgen ray.

Dr. William Palmer Lucas, San Francisco: It has been my experience that we may find practically the same type of picture which Dr. Friedländer has shown in children without any clinical symptoms. I have followed such children for months without any symptoms arising. In cases of enlarged thymus with symptoms we have obtained similar results with Roentgen treatment, but not in two weeks.

Dr. Fritz B. Talbot, Boston: We have had practically the same results as Dr. Lucas. Many times we cannot see whether or not we have a pathologic enlargement of the thymus with the Roentgen ray. We have seen the same improvement under Roentgen treatment as has been described. We had one case four or five years ago in which the symptoms disappeared, but last spring they returned, and a long course of treatment was necessary.

Dr. David M. Cowie, Ann Arbor, Mich.: I have had children in whom the Roentgen ray showed an enlarged thymus but we could not confirm that diagnosis. Again, we have had typical cases of thymus enlargement which were not shown by the Roentgen ray.

Dr. Samuel McC. Hamill, Philadelphia: I have had cases with the Roentgen diagnosis of thymus enlargement, to which I have not paid a great deal of attention, but I finally decided to follow up such a case, and I kept the child in the ward for two weeks. We then had another roentgenogram taken which showed no shadow. I have wondered whether the exposure to the Roentgen ray in taking the picture could have had a therapeutic effect on the thymus.

Dr. J. P. Crozer Griffith, Philadelphia: I have seen this condition steadily disappear under Roentgen treatment. Children may have thymus enlargement without symptoms and die from it. Thymus enlargement is an accompaniment of status lymphaticus.

Dr. Alfred F. Hess, New York: It seems possible that the same picture produced by enlarged thymus might be produced by enlargement of the vessels at the base of the heart. This picture is sometimes seen in children with scurvy and in adults with beriberi. In such conditions the enlargement disappears with the disappearance of the disease. In making roentgenograms of babies we have found that some of the controls give pictures just like those of thymic asthma, and yet no symptoms of thymic asthma are present.

Dr. J. H. Mason Knox, Baltimore: Our roentgenologist is very skeptical as to whether we can detect thymus enlargement by either the Roentgen ray or physical examination.

Dr. F. S. Churchill, Chicago: How long have these cases been under observation?

Dr. Alfred Friedländer, Cincinnati: There are symptomless cases of enlarged thymus; others, again, produce pressure effects, or the symptoms of hyperthymus. As some of these cases are exceedingly threatening, and the thymus increases or decreases in size very rapidly, the fact that a case is apparently running a symptomless course is no reason for not reducing the size of the thymus. I have studied a large series of cases and have found that when there is enlarged thymus, if marked congestion occurs, as from whooping cough or bronchitis, it may light up symptoms and cause the death of the child. If we get a picture in which we suspect enlargement of the vessels at the base of the heart, a few treatments will effect a change if the condition is that of thymus enlargement, so that then the diagnosis will not be difficult. Some of these cases date back to 1903, and some are very recent. The first patient was treated in 1903, and is now hale and hearty.

Case of Congenital Heart Disease

Dr. Charles Hunter Dunn, Boston: The diagnosis in this case was pulmonary stenosis, defective interventricular septum, chronic intestinal tuberculosis, chronic tuberculosis of the mesenteric lymph nodes, possible tuberculous peritonitis, rickets, and terminal bronchopneumonia. The child survived fifteen months. At necropsy the heart showed very marked enlargement. The point of origin of the aorta and pulmonary arteries, respectively, were reversed, the aorta rising in front and to the right, and the pulmonary artery behind and to the left. The foramen ovale was entirely open. The tricuspid and mitral valves were normal except for widening of the orifices produced by dilatation of the ventricles. There was some hypertrophy of the wall of the left ventricle, and marked dilatation of the cavity of the right ventricle without notable hypertrophy of the walls. The aortic orifice was situated in the right ventricle somewhat further forward than the normal position of the pulmonary orifice. The pulmonary orifice was situated in the left

ventricle in the position normally occupied by the aortic orifice. It showed marked stenosis. There was an oval opening in the ventricular septum 5 cm. in diameter situated in the usual position of that lesion. The remarkable feature of this case was that the child should have lived so long, especially with the additional handicap of tuberculosis.

Restoration of Maternal Nursing After Sixteen Days of Complete Interruption

DR. THOMAS S. SOUTHWORTH, New York: Nine days after birth, an infant developed a severe cellulitis, which involved the right buttock, the entire lower part of the back from the ribs to the sacrum, the under surface of the chin, and the upper part of the neck. Owing to the erysipeloid appearance of the cellulitis, the child was removed from the breast and the mother sent home from the hospital. Two weeks elapsed during which time she made no attempt to pump her breasts or retain her milk. It then seemed that the baby would die if it did not receive breast milk. The mother began taking 1 pint of corn meal gruel and 1 quart of milk daily, following definite instructions. At first complementary feedings of malt soup mixture were given after each nursing. After a few days these were stopped and the breast milk sufficed. The child gradually overcame its various infections.

DISCUSSION

DR. CHARLES HERRMAN, New York: I have the chart of a case that shows the possibility of resuming breast feeding after an interruption of ten weeks. It is rather important to remember that in mothers who have stopped breast feeding it can be resumed if a persistent effort is made.

DR. J. P. SEDGWICK, Minneapolis: I know of one instance in which breast feeding was resumed after an interval of nine weeks. Cases have been reported in which breast feeding has been resumed after an interval of three or four months.

DR. HOWARD C. CARPENTER, Philadelphia: One instance came under my observation in which both a mother and her daughter were nursing babies at the same time. The babies were not thriving. I had these mothers exchange babies, after which both babies did well.

Case of Meningococcus Meningitis in the New-Born

DR. D. J. MILTON MILLER, Atlantic City, N. J.: This case was of particular interest because of its onset with conjunctivitis, mistakenly regarded as gonorrheal. A bullous eruption appeared in the second week of the disease. There was a prolonged latent period before the signs of meningitis were apparent, these not appearing until the fourth week. The spinal fluid gelatinized at once on withdrawal. The case was also unusual in regard to the large number of punctures of the fontanel, ten, in so young a patient, with no apparent ill effect beyond vomiting. There were in all 260 c.c. of serum introduced with no sign of serum disease. After the tenth injection of serum there was an apparent improvement, which was followed by a return of the symptoms and death.

Appendicitis in a Nine Month Old Baby

DR. ISAAC A. ABT, Chicago: This child gave a history of repeated attacks of bronchitis. The physical examination revealed symptoms and signs entirely referable to the respiratory system. The examination of the heart, abdomen and extremities was negative. At necropsy a perforating appendicitis was found.

Case of Pneumothorax in a Twelve Year Old Boy

DR. ISAAC A. ABT, Chicago: A boy was admitted to the hospital suffering from dyspnea. His previous history was unimportant. A needle was inserted into the thoracic cavity with a catheter attached. Later an incision was made and a tube inserted. The following day the right side of the chest became swollen, and the succeeding day the chest became edematous. The emphysema became general and the child died.

DISCUSSION

DR. J. P. SEDGWICK, Minneapolis: We had a case in which the infant developed a pneumothorax on the second day. This child recovered. We were unable to find the cause of the condition in this child.

DR. HENRY F. HELMHOLZ, Evanston, Ill.: A case somewhat similar to Dr. Abt's first case came under my observation. We thought we were dealing with a right sided lobar pneumonia. Later symptoms of peritonitis developed, and we thought this was a pneumococcus peritonitis. At necropsy we found a focus in the gallbladder, and appendicitis. I cannot say which was the primary infection.

DR. J. P. CROZER GRIFFITH, Philadelphia: I recall a similar case in which we had no idea what the correct diagnosis was. At necropsy we found a perforated appendix.

Hereditary Multiple Exostoses

DR. DAVID MURRAY COWIE, Ann Arbor, Mich.: This patient, a boy, aged 10 years, showed nothing unusual except the multiple outgrowths and irregular thickenings of most of the bones of the skeleton, many of which were plainly seen on casual observation. The involvement was quite definitely symmetrical. In the upper extremities the humerus, radius and metacarpal bones showed thickenings and exostoses. The carpal bones showed no deformities. The femur showed thickening of the neck with blunt outgrowths projecting forward and downward. There was thickening of the lower ends with marked spinous outgrowths projecting upward on the inner and outer aspects. The tibia showed many spines projecting downward about the head. The ribs, clavicle, scapulae and large pelvic bones also showed the process. No prominences could be felt on the head. The father of this boy showed similar, larger, but not so numerous skeletal changes as those of the son. The changes seemed to have had little effect in hindering most of the bones from reaching their normal length and size.

(To be continued)

AMERICAN GYNECOLOGICAL SOCIETY

Forty-Second Annual Meeting, held at Pittsburgh, May 31 and June 1, 1917

(Concluded from page 145)

SYMPOSIUM ON THE RELATION OF THE GLANDS OF INTERNAL SECRETION TO GYNECOLOGY AND OBSTETRICS

Relation of the Pituitary to the Female Generative Organs

DR. EMIL GOETSCH, Baltimore: There is a close interrelationship in function between the pituitary and sex glands. Overfunction of the pituitary anterior lobe is associated with overactivity of the sex glands. Deficiency of pituitary secretion is followed by underdevelopment and genital aplasia in the young and by sexual inactivity and retrogression in the adult. Primary alterations in the function of the sex glands, as in pregnancy and after castration, are followed by pituitary hypertrophy and hyperplasia. The specific action of posterior lobe extract on the smooth musculature of the uterus and bowel has led to the wide usage of this drug in obstetric practice and in the treatment of intestinal paresis following abdominal and pelvic operations. The administration of pituitary extracts is of distinct benefit in clinical states of pituitary underfunction.

The Pineal Gland Influence on Growth and Differentiation, with Particular Reference to Its Influence on Prenatal Development

DR. CAREY PRATT MCCORD, Detroit: A clinical syndrome is to be associated with disturbances of the functions of the pineal gland. Because of the involution of the pineal at puberty, the constitutional manifestations of pineal pathology appear to be confined to prepubertal years. The essential characteristics (apart from pressure and neighborhood manifestations) are (*a*) early sexual development evidenced in the enlarged genitalia, pubic hair, general body hair, and early change in voice; (*b*) precocious mental development,

manifested in maturity of thought and speech, and (*c*) general overgrowth of body to the extent that a child of 6 or 7 years may have the appearance of a child near puberty. The gland is not essential for the maintenance of life. The early symptoms following pinealectomy are attributable to the severe brain injury. No changes attend the removal of the gland in adult animals. The administration of pineal substance to young mammals is reported to hasten growth and sexual maturity. In unicellular organisms (paramecia), pineal extracts increase the rate of production to more than double that of controls. In larval forms (*Ranidae*), both growth and differentiation are hastened as a result of pineal feeding. The inference is allowable that the pineal gland is an organ of internal secretion whose functions, however, are of minor significance in the general activities of the endocrine system.

The Physiologic and Pathologic Importance of the Parathyroids

DR. CARL VOEGTLIN, Washington, D. C.: The presence of a minimum of parathyroid tissue in the body is essential for life and the continuation of normal metabolism. Parathyroid insufficiency seems to be characterized by an increased irritability of the nervous system to the galvanic current, which may be due to the withdrawal of soluble calcium salts from the blood and tissues. Parathyroid insufficiency leads to an alkalosis which is converted into an acidosis as a result of active tetany. Definite metabolic changes take place in animals after complete parathyroidectomy. Pregnancy puts an extra strain on the functions of the parathyroid, as evidenced by the appearance of tetany during this period in partially parathyroidectomized animals. Tetany has been observed during lactation in animals with parathyroid insufficiency. Interruption of lactation was followed by recovery. The offspring of partially parathyroidectomized animals exhibit a marked increase in nerve irritability. An intravenous injection of soluble calcium or strontium salts or hydrochloric acid almost instantly removes the symptoms of tetany. However, tetany may reappear after this treatment, and the life of such animals cannot be saved by the continued administration of calcium. The injection of parathyroid extract seems to have a temporary curative effect on tetany animals. Isotransplantation of parathyroid into animals with parathyroid insufficiency is usually successful. A condition which might justly be termed hyperparathyroidism is unknown at the present time.

Relation of the Parathyroids to the Female Genital Apparatus

DR. EUGENE H. POOL, New York: No direct relationship has been established between the parathyroids and the female sex organs; no morphologic changes in the parathyroids have been noted during pregnancy; yet apparently there is a connection between the parathyroids and the sex processes in the female. Tetany, the clinical evidence of insufficient parathyroid function, is somewhat prone to occur in menstruating, pregnant and puerperal women, as well as patients suffering from gynecologic diseases or who have undergone gynecologic operations. The cause of maternal tetany is now referred to parathyroid insufficiency. The function of the parathyroids is apparently closely connected with calcium. There is reason to believe that maternal tetany and lactation tetany are associated with calcium deficiency. Latent tetany, or a subtetanic condition, is much more common in pregnant and puerperal women than is usually assumed. In the treatment of maternal tetany, the administration of calcium in large doses is followed by beneficial results in the great majority of the cases.

The Thyroid in Relation to Gynecology and Obstetrics

DR. DAVID MARINE, Cleveland: There is evidence of a thyroid sex gland interrelation in the female in association with the development of secondary sexual characters, with menstruation and with pregnancy and also in the male at puberty, but to a very slight degree. The meager evidence available would tend to indicate that the interstitial cells of the ovary and, perhaps, also, the suprarenal cortex play a major rôle in this relation in the female, as certainly the cells of Leydig do in the male.

The Endocrine Function of the Pancreas and Its Relation to the Sex Life of Women

DR. A. J. CARLSON, Chicago: There is, at present, no evidence of any specific relations of the endocrine functions of the pancreas to the gonads, male or female, or to menstruation, pregnancy and lactation. Absolute diabetes, induced after conception, leads to death of the fetus. Absolute diabetes probably renders conception impossible. Partial diabetes under careful dietary control permits of normal sex life of women (menstruation, normal pregnancy, normal child, lactation), and pregnancy under such conditions does not aggravate the diabetes. But in the absence of such dietary control the condition of pregnancy aggravates the diabetes in the mother, and uncontrolled diabetes in the mother is extremely injurious to the fetus. There is some evidence that in late stages of pregnancy the fetal pancreas may function for the mother.

Influence Exerted by the Suprarenal Bodies on the Genital System

DR. SWALE VINCENT, Winnipeg, Manit.: There is considerable clinical evidence that tumors of the suprarenal cortex are frequently associated with sex abnormalities, and that when cortical tumors occur in the female, an accentuation of male secondary sexual characteristics develops, and simultaneously a hypoplastic condition of the internal generative organs supervenes. Additional evidence as to a connection between suprarenal cortex and the sexual organs is furnished by the enlargement of the cortex during breeding and pregnancy. Feeding young animals with suprarenal gland substance seems to stimulate the growth of the testes.

Relation of the Ovary to the Uterus and the Mammary Gland

DR. LEO LOEB, St. Louis: The corpus luteum has a sensitizing action on the uterus. If the uterus is incised or mechanically stimulated at the time during which the corpus luteum is elaborating this growth substance, maternal placenta (deciduoma) is formed. The mechanical stimuli, therefore, assume in this respect the function which the ovum exerts under normal conditions. The form of growth response of each species is characteristic. No specificity exists in the sensitizing substance given off by the corpus luteum, as far as different individuals of the same species are concerned. The life period of experimental deciduomas is short, except in pregnancy, during which their persistence is prolonged. Corresponding to and dependent on the cyclic ovarian changes, uterine cyclic changes occur. The cycle consists of heat, growth, with associated glandular activity, regression and interval. Heat probably is due to maturation of the follicles and is dependent on the absence of the corpora lutea; growth activity is the result of corpus luteum secretions; regression marks the cessation of corpus luteum secretion, which is followed in the interval by a condition of rest. Pregnancy causing a persistence of the corpus luteum is characterized by an accentuation but not a prolongation of the active phase, and an inhibition of the uterine cyclical changes throughout gestation. While it is possible during pregnancy to produce experimentally a new ovarian cycle through excision of the corpora lutea, such a new ovarian cycle is not followed by a new uterine cycle. During pregnancy a mechanism is at work preventing the uterine mucosa from responding to the stimuli given off by various ovarian structures. It follows that the corpus luteum subserves at least two functions, inhibiting ovulation and producing a substance which causes growth in the uterus. The ovary shows other noncyclic functions. It has a trophic influence on the genitals, and either primarily or secondarily determines the development of the secondary sexual characters. The ovary likewise controls the development of the mammary glands. It exerts a trophic influence on this organ, and determines its normal cycle. During heat and subsequent to ovulation, proliferated changes occur; these cease while the corpus luteum develops and functionates. The incidence of breast cancer in mice is greatly reduced by castration.

Transplantation and Retention of Ovarian Tissue After Hysterectomy

DR. WILLIAM P. GRAVES, Boston: After extirpation of the uterus, vasomotor disturbance ensues with approximately equal frequency, whether the ovaries are retained in situ, totally ablated, or transplanted. Retention of ovarian tissue after hysterectomy is of little or no physiologic value, and may be productive of serious harm to the patient.

The Placenta Regarded as a Gland of Internal Secretion

DR. ROBERT T. FRANK, New York: The experimental work of the last decade proves that Halban was correct in ascribing to the placenta an action on the uterus and breasts. Placental extracts (mainly the lipoid fraction) rapidly induce hyperplasia of the uterus and breast gland tissue and nipples, in castrated or in noncastrated animals. The chemical substance which induces these changes can exert its influence in the absence of the thyroids, suprarenals, pancreas, or in the absence of thyroid and suprarenals combined. In view of the apparent identity of corpus luteum and placental substance, the question arises whether the placenta acts merely as a storage reservoir for corpus luteum secretion during the latter half of pregnancy, or whether the placenta elaborates a hormone of its own.

Relation of the Sex Glands to Metabolism

DR. JOHN R. MURLIN and DR. HAROLD C. BAILEY, New York: Removal of the ovaries of our dogs was followed by an increase in weight in both and a lowering of the metabolism in one from 12 to 17 per cent., and in the other from 6 to 14 per cent. We feel that indirect action has a bearing on this reduction, and we do not believe that the indications point decisively to the loss of a specific stimulus from the ovary affecting the oxidative processes of the cells.

DISCUSSION ON THE RELATION OF THE GLANDS OF INTERNAL SECRETION TO GYNECOLOGY AND OBSTETRICS

DR. J. WHITRIDGE WILLIAMS, Baltimore: The posterior lobe of the pituitary is a most powerful therapeutic agent, one which is doing a great deal of good and, also, a great deal of harm. The injection of a cubic centimeter of any of the ordinary pituitary extracts in many cases has a marvelous effect. Within three minutes after injection of this drug, the uterus, which previously has been acting in a very sluggish way, takes on intense activity, and often labor will be brought to a standstill within the next few minutes. About the thyroid, my practical experience with pregnancy complicated by goiters of various kinds has shown me that the condition can, in great part, be disregarded.

DR. GEORGE GELLHORN, St. Louis: In one case of kraurosis vulvae there has been permanent relief after feeding the patient ovarian extract. Another patient was temporarily improved after injection of the extract.

DR. JOHN G. CLARK, Philadelphia: The preservation of normal ovarian tissue is of vital value in younger women. If there is any one point that is definitely conclusive, it is the retention of ovaries or an ovary, regardless of whether or not the uterus is present. We have observed in the younger women that when ovaries suggestively diseased were preserved, these patients did not have a satisfactory or postoperative convalescence. A large proportion of them subsequently suffered pain and distress free from a pathologic condition. In fibroid cases in young women in whom the ovaries were normal, we saw infinitely better results than under the older methods when the ovaries were removed.

DR. FRANCIS CARTER WOOD, New York: We have tried the Beatson operation experimentally, and the influence of the removal of the ovaries on carcinoma of the breast. This operation produces a temporary effect, which is no doubt due to the removal of the secreting substance of the ovary or to nutritional and vascular conditions.

Clinical Study of Blood Pressure, Pulse Pressure, Hemoglobin in Postoperative Shock, Postoperative Hemorrhage, and Postoperative Cardiac Dilatation

DR. JOHN O. POLAK, Brooklyn: There is a constant rise of from five to fifteen points in the hemoglobin readings following anesthesia with ether, when such anesthesia occupies more than thirty minutes. Consequently, allowance must be made for this rise in using hemoglobin estimations as a diagnostic sign in internal bleeding. The erythrocyte count is also increased, but its variation from the preoperative is so slight that it does not warrant any conclusions. In the majority of cases there is a moderate fall in both the systolic and the diastolic blood pressure following ether anesthesia. The blood pressure returns to normal, that is, to preoperative reading, in from twelve to forty-eight hours. The inhalation of oxygen after the withdrawal of the ether vapor diminishes this fall in blood pressure, but is only transient in its effect. In cases of shock, especially when there has been much blood lost during the operation, the fall in blood pressure is greater than after long operation without blood loss. The pulse pressure is a better index of hemorrhage or cardiac failure than the systolic pressure. There is a constant rise in the leukocyte count in hemorrhages, while the leukocytes fall in shock.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

July, LXXVI, No. 1

1 *Cesarean Scar, an Anatomic Study. J. R. Losee, New York.—p. 1.
2 Several Every-Day Obstetric Problems. J. B. DeLee, Chicago.—p. 15.
3 *Cesarean Section in Placenta Praevia. G. M. Boyd, Philadelphia.—p. 26.
4 Tampon Treatment of Placenta Praevia. J. O. Arnold, Philadelphia.—p. 38.
5 Accouchement Forcé in Placenta Praevia. A. W. Tallant, Philadelphia.—p. 46.
6 Intermediate Repair of Injuries of Genital Canal in Childbirth. B. C. Hirst, Philadelphia.—p. 50.
7 Immediate Repair of Injuries of Parturition. W. P. Pool, Brooklyn.—p. 53.
8 Methods of Treatment of Placenta Praevia. R. M. Beach, Brooklyn.—p. 57.
9 Dilatation, Vaginal Plastic Operations, or Stem Pessaries as Exclusive Treatment for Sterility. F. C. Holden, Brooklyn.—p. 64.
10 Case of Adenomyoma of Ovary. M. Rabinovitz, New York.—p. 67.
11 *Some Causes of Fetal Death. W. Pfeiffer, Brooklyn.—p. 74.

1. **Cesarean Scar.**—Observations were made by Losee from twenty different specimens of uterine scar removed from the uterus at or near term. All the previous cesareans were the transperitoneal operation of the high incision type. In nine there was a complete or partial rupture of the uterus, and in eleven an incision was made either through the old scar or adjacent to it, and the whole scar or the edges were afterward excised for examination. Many specimens were taken while the uterus was partially contracted, and others after rupture with complete contraction. Losee says that the strength of the uterine scar after cesarean section depends on the absence from the wound of infection and foreign material and on the perfect coaptation of the incised surfaces. A perfectly healed wound leaves the myometrium as strong after operation as before, so far as can be determined by the histologic examination of the tissue in the line of the former incision. A continuous suture in the myometrium adjacent to the decidua may assist in preventing the separation of the cut surfaces by blood clot or lochia in addition to the usual interrupted suture through serosa and myometrium. The placenta in a subsequent pregnancy has little or no effect in weakening the firmly united scar, but if the scar is already weak it may accentuate this weakness. Other than a small amount of fibrous tissue beneath the peritoneum, the myometrium in line with the former incision contains no scar tissue and the uterine muscle regenerates. Rupture invariably takes place through the site of the former scar and not through the adjacent muscle tissue. Without definite means of estimating the strength of the uterine scar after cesarean section subsequent pregnancies must always be carefully observed as they approach term.

3. **Cesarean Section in Placenta Praevia.**—Boyd and an associate have gone over the records of the Philadelphia Lying-In Charity, and found that in 8,697 cases there were fifty-nine of placenta praevia, one in 147. This high frequency is due to the fact that this institution does a large amount of emergency work. In fifteen of the cases, the patients were primiparas; and in forty-four, multiparas. Six cases were of the central type, and fifty-three, marginal and partial. The average length of gestation for a case was 7.3 months. Twelve of these women were at term—20 per cent. Seven mothers died—11.8 per cent. Of these seven cases, three were of the central type. All of the patients who died were exsanguinated on admission, and four of the seven were practically dying. Deducting these four, the mortality rate is 5 per cent. The methods of treatment employed were tampon, metreurysis, manual dilatation and podalic version. In two cases, cesarean section was performed. The total fetal mortality was 79 per cent., but in these cases only 50 per cent. of the infants were viable. At the Medico-Chirurgical Hospital, the records show that in 1,085 women treated, there were fifteen of placenta praevia with no maternal death. The fetal mortality, however, was 66.3 per cent. One patient was a primipara, and fourteen were multiparas. There was one cesarean section. In this case there was profuse hemorrhage with signs of infection. For this reason, the Porro operation was done. The mother recovered, but the child died on the following day. Taking the two institutions together, there were seventy-four cases. Leaving out of consideration the four women that were practically dead when admitted, the mortality in these cases was but 4 per cent.

11. **Causes of Fetal Death.**—Pfeiffer reports a case in which death was due to multiple twists in the cord.

American Journal of Physiology, Baltimore

July, XLIII, No. 4

12 *Influence of Thyroid Feeding on Carbohydrate Metabolism. S. Kuriyama, New Haven, Conn.—p. 481.
13 Variations in Irritability of Reflex Arc. Flexion Reflex Variations, Compared with Those of the Nerve Muscle Preparation. E. L. Porter, Philadelphia.—p. 497.
14 Behavior of Holothurians in Balanced Illumination. W. J. Crozier. —p. 510.
15 *Effect of Dextrose Given Intravenously on Blood Composition and Urinary Secretion. D. M. Davis, Baltimore.—p. 514.
16 *Effect of Epinephrin on Muscular Fatigue. C. M. Gruber, Albany, N. Y.—p. 530.
17 Effect of Phosphorus Poisoning on Catalase Content of Tissues. W. E. Burge, Urbana, Ill.—p. 545.
18 Nature and Properties of Metathrombin. A. R. Rich, Baltimore. —p. 549.
19 Changes in Clotting Power of Oxalated Plasma on Standing. A. R. Rich, Baltimore.—p. 571.
20 Diastatic Action of Saliva in Horse. R. J. Seymour, Columbus. —p. 577.
21 *Relation between Thromboplastic Action of Cephalin and Its Degree of Unsaturation. J. McLean, Philadelphia.—p. 586.

12. **Thyroid and Carbohydrate Metabolism.**—The influence of thyroid feeding on the glycogen content of the liver, blood sugar content, assimilation limit for dextrose and also on epinephrin hyperglycemia and glycosuria was studied by Kuriyama. Fresh thyroid gland of pigs or desiccated thyroid administered by mouth in doses of 3 to 5 gm. (fresh) or 0.5 to 1.7 gm. (desiccated) per day, decreased the glycogen content of the liver of white rats distinctly in three to five days. Control animals, fed on the same diet with the addition of muscle tissue or egg, do not show any such change, even when the food amount is regulated so that they lose as much in body weight as the thyroid fed animals. The influence of thyroid feeding on liver glycogen can be very easily removed by omitting thyroid from the diet. The liver shows its normal glycogen content two or three days after the cessation of thyroid administration, even when the loss of body weight has not been regained. This phenomenon seems to show that the changes resulting from thyroid feeding and causing the loss of liver glycogen, are not of a serious morphologic nature. When dextrose is introduced parenterally to fasted rats which show a very low glycogen content of the liver, the amount of liver glycogen increases markedly in a few hours. This does not seem to be the case in the thyroid fed rats. Experimental hyperthyroidism does not change the sugar content of the blood in either rats or rabbits. Spontaneous glycosuria does not result from thyroid feeding in either rats or rabbits. The tolerance of thyroid fed rabbits for dextrose, parenterally administered, does not differ from that of normal animals. Nearly the same degree of hyperglycemia and glycosuria can be induced by epinephrin injection in thyroid fed as in control rabbits. The suprarenal gland of thyroid fed rats contains approximately the same amount of epinephrin as that of normal rats.

15. **Blood Sugar and Urinary Secretion.**—Under experimental conditions unusually free from disturbing influences, the sugar output per unit of time shows a direct relationship with the blood sugar level. On intravenous injection of a given quantity of dextrose, the amount of diuresis produced depends on the amount of water available, within certain limits. If a very concentrated solution is given, the body is robbed of water. If large quantities of water are given with the dextrose, its percentage retention in the body is increased and water is retained along with it, so that less sugar is excreted, despite diuresis. This retention is not confined to the blood, but occurs also in the tissues. If more water is available, more dextrose is excreted into the urine at a given level of blood sugar than when less water is available.

16. **Effect of Epinephrin on Muscular Fatigue.**—Gruber found that in the fatigued, unaltered muscle epinephrin may increase the height of muscular contraction by a twofold action, by improvement of the blood supply (vasodilatation) and by its chemical action on some substances in the muscle. In a muscle in which the nerve is cut and stimulated, epinephrin in small doses, however administered, does not better the circulation and must therefore produce its effect of increasing the height of muscular contraction by its chemical (specific) action alone. The following three processes which normally go on in the muscle may be greatly accelerated by epinephrin and it is not improbable that one or all of these will finally prove to be the way in which epinephrin produces its effects: (1) the conversion of glycogen into sugar; (2) the reconversion of lactic acid into sugar (transformation of fatigue products); (3) the oxidizing of lactic acid into carbon dioxid and water (destruction of fatigue products).

21. **Thromboplastic Action of Cephalin.**—McLean's experiments show that the thromboplastic action of cephalin bears a direct relation to its degree of unsaturation, the greater the degree of unsaturation the greater the degree of thromboplastic activity. Cephalin exhibits most effectively its power to hasten the coagulation of the blood shortly after its isolation from the tissues. Cephalin which has become saturated beyond a certain degree, either by reduction or oxidation, completely loses its thromboplastic activity. Cephalin in solution which has become saturated or partly saturated gives an acid reaction and retards the coagulation of blood. As cephalin becomes saturated it gradually loses its property of solution in ether or chloroform.

American Journal of Public Health, Boston

June, VII, No. 6

22 Military Sanitation in Present War. T. Saville, Cambridge.—p. 527.
23 Prevention and Cure of Acute Lobar Pneumonia. R. Cole, New York.—p. 548.
24 Alcohol; Public Health Problem. H. Emerson, New York.—p. 555.
25 Death Rate of Washington. W. F. Willcox, Ithaca, N. Y.—p. 562.
26 Composition and Relative Economy of Some Bread Sold in Washton, D. C. M. A. Pozen and M. Starbecker, Washington, D. C. —p. 570.

Annals of Medical History, New York

April, I, No. 1

27 Scientific Position of Girolamo Fracastoro (1483-1553), with Especial Reference to Source, Character and Influence of His Theory of Infection. C. Singer and D. Singer, England.—p. 1.
28 Greek Cult of Dead and Chthonian Deities in Ancient Medicine. F. H. Garrison, Washington, D. C.—p. 35.
29 Voltaire's Relation to Medicine. P. Bailey, New York.—p. 54.
30 Unpublished Bronze Ecorché. E. C. Streeter, Boston.—p. 73.
31 Burke and Hare and Psychology of Murder. C. W. Burr, Philadelphia.—p. 75.

32 Hebrew Prayers for Sick. C. D. Spivak, Denver.—p. 83.
33 Laryngology and Otology in Colonial Times. S. A. Friedberg, Chicago.—p. 86.

Boston Medical and Surgical Journal

June 28, CLXXVI, No. 26

34 Loss of Sight from Posterior Accessory Sinus Disease; Report of Three Cases. L. E. White, Boston.—p. 891.
35 Cranial Measurements of Persons Dying in Insane Hospitals. L. G. Lowrey, Boston.—p. 899.
36 Two Cases of Leiomyosarcoma. C. H. Hare, Boston.—p. 901.

July 5, CLXXVII, No. 1

37 Report of Service with First Harvard Surgical Unit Serving at British Base Hospital, with End-Results of Cases One Year Later. C. C. Simmons, Boston.—p. 1.
38 Ascending Lymphogenous Renal Infection. D. N. Eisendrath and O. T. Schultz, Chicago.—p. 10.

Cleveland Medical Journal

June, XVI, No. 6

39 Diagnosis and Treatment of Congenital Pyloric Stenosis. C. G. Grulee and D. D. Lewis, Chicago.—p. 387. To be continued.
40 Latent Tuberculosis; Its Importance in Military Preparation. E. R. Baldwin, Saranac Lake, N. Y.—p. 410.
41 *Bismuth Poisoning and Nitrite Poisoning from Use of Bismuth Subnitrate; Report of Three Cases. J. Phillips, Cleveland.—p. 419.

41. **Bismuth and Nitrite Poisoning.**—One of the cases cited by Phillips followed the injection of bismuth paste. It proved fatal. Three months before the patient jabbed a pitchfork into his left knee. The knee became swollen and red so that it was necessary to open the joint and drain. Because of a persistent sinus following incision, a month later this was injected with bismuth paste. The sinus closed over, but five weeks previous to death the patient began to complain of a sore mouth, which continued to get worse until he died. The blood examination on admission to hospital showed 3,900,000 red blood corpuscles, 30,000 white blood corpuscles and 70 per cent. hemoglobin. At first the case was thought to be one of cancrum oris, as the slough obscured the pigmentation. After about ten days the slough in the mouth separated, leaving a bleeding surface and then there could be made out very definite pigmentation of the mucous membrane and the line about the teeth. A roentgenogram of the knee revealed the presence of a large quantity of bismuth in the knee joint and in the crural bursa. The other two cases illustrate nitrite poisoning from the use of bismuth subnitrate. A 4-year-old child was given a dram of bismuth subnitrate in a starch enema because of colitis. Twelve hours later she became nauseated, was very cyanosed, pulse small and weak, and partial coma supervened. This condition continued throughout the day. The blood was very dark. The colon was irrigated repeatedly and injections of camphor given hypodermically, and within twenty-four hours she was very much better, the cyanosis being less marked. By the third day all the symptoms had disappeared. A man, aged 50, had been given an ounce of bismuth subnitrate in milk for Roentgen-ray examination of his stomach. During the night the symptoms of poisoning appeared and persisted for three days.

Florida Medical Association Journal, St. Augustine

June, III, No. 12

42 Gallstone Disease. J. E. Boyd, Jacksonville.—p. 363.
43 Roentgen Diagnosis of Gastro-Intestinal Tract. L. W. Cunningham, Jacksonville.—p. 365.
44 Prophylaxis of Syphilis of Central Nervous System. G. E. Henson, Jacksonville.—p. 367.

Indiana State Medical Association Journal, Fort Wayne

June, X, No. 6

45 Gastro-Intestinal Diseases Along Border. F. W. Foxworthy, Indianapolis.—p. 225.
46 Diagnosis of Maxillary Sinusitis. J. D. Heitger, Bedford.—p. 232.

Iowa State Medical Society Journal, Des Moines

June, VII, No. 6

47 Tubal Pregnancy. M. M. Ghent, St. Paul, Minn.—p. 203.
48 Early Hypertensive Cardiorenal Vascular Disease. J. W. Shuman, Sioux City.—p. 208.
49 Mouth Infections. M. N. Gernsey, Waverly.—p. 210.
50 Control of Tuberculosis. A. E. Kepford, Des Moines.—p. 211.
51 Diabetes and Practitioner. D. M. Berkman, Rochester, Minn.—p. 214.
52 Significance of Corpus Luteum. C. O. Epley, Laporte City.—p. 215.
53 Anterior Poliomyelitis. F. A. Hennessey, Calmar.—p. 218.
54 Hospital Organization. F. G. Murphy, Mason City.—p. 219.

Journal of Experimental Medicine, Baltimore

July, XXVI, No. 1

55 Relative Toxicity of Uranium Nitrate for Animals of Different Ages. W. deB. MacNider, Chapel Hill, N. C.—p. 1.
56 Efficiency of Various Diuretics in Acutely Nephropathic Kidney, Protected and Unprotected by Sodium Carbonate. W. deB. MacNider, Chapel Hill, N. C.—p. 19.
57 *Cultivation of Spirocheta Obermeieri. H. Plotz, New York.—p. 37.
58 *Valve to Regulate Delivery of Air and Ether Vapor in any Proportion. F. L. Gates, New York.—p. 41.
59 *Relation of Mosquitoes and Flies to Epidemiology of Acute Poliomyelitis. H. Noguchi and R. Kudo, New York.—p. 49.
60 *New Anaerobic Methods. W. G. Smillie, New York.—p. 59.
61 *Methods for Determination of Pneumonia Types. F. G. Blake, New York.—p. 67.
62 Cicatrization of Wounds. New Mathematical Expression of Cicatrization. A. J. de Beaujeau, France.—p. 81.
63 *Id. Bacteriologic Asepsis of Wound. A. Vincent, France.—p. 83.
64 *Id. Use of Chloramin-T Paste for Sterilization of Wounds. M. Daufresne, France.—p. 91.
65 *Id. Sterilization of Wounds with Chloramin-T. A. Carrel and A. Hartmann, France.—p. 95.
66 *Toxin and Antitoxin of and Protective Inoculation against Bacillus Welchii. C. G. Bull and I. W. Pritchett, New York.—p. 119.

57. **Cultivation of Spirocheta Obermeieri.**—The successful cultivation of *Spirochaeta obermeieri* directly from the blood of patients suffering from European relapsing fever is reported by Plotz. The studies were carried on in Serbia in the winter of 1915. The successful cultures, five in all, were made from cases clinically typical of European relapsing fever occurring in civilians and soldiers then residing in Macedonia. The method employed is the same as that used by Noguchi. Plotz succeeded in growing *Spirochaeta obermeieri* from mice infected with relapsing fever. This spirochete had previously been kept alive by continued passage from animal to animal for a considerable length of time. It has been transplanted for five generations in two cultures.

58. **Valve for Regulation of Air and Ether.**—A valve is described by Gates for the control of ether vapor for anesthesia which regulates the mixture of ether vapor from a Woulfe bottle with air in any proportion, without changing the volume or the pressure at which the mixture is delivered. The regulation of the air stream both to and from the ether bottle controls the mixture accurately and is an essential feature of the valve.

59. **Epidemiology of Acute Poliomyelitis.**—The experiments performed by Noguchi and Kudo indicate that it is improbable that the virus of poliomyelitis is taken up by mosquitoes or by fly larvae. Not only does the virus fail to multiply, but probably it is rapidly destroyed within the body of the insects. The notion that these nonbiting flies may act as intermediary hosts or a virus reservoir is not justified by the evidence brought out in the authors' study.

60. **New Anaerobic Methods.**—Anaerobic methods have been devised by Smillie which depend on the catalytic action of platinized asbestos on hydrogen and oxygen. The methods may be utilized for the growth of anaerobes in test tubes, on Blake bottles, in flasks, and in a large container. Because oxygen is so completely removed, the methods are said to be of great value in the successful cultivation of absolute anaerobes.

61. **Determination of Pneumococcus Types.**—The most satisfactory method of determination of pneumococcus types in lobar pneumonia is by the intraperitoneal inoculation of a mouse with the patient's sputum. The diagnosis of type is made directly on the peritoneal exudate. Certain factors in the method commonly used have interfered with the rapid determination of types in an appreciable number of cases, notably the growth of other organisms in the peritoneal exudate, together with pneumococcus, and some confusion has arisen because occasional strains of pneumococci have been encountered that show cross agglutination reactions when undiluted immune serum is used. To obviate these difficulties a new method for the determination of types has been devised

by Blake. It depends on the fact that there is produced by the growth of the pneumococcus a soluble substance which is present in the peritoneal exudate of the mouse in sufficient quantity to give a specific precipitin reaction with the homologous immune serum. The precipitin method can be used in all instances in which the determination of types by the agglutination method is possible, and it possesses certain distinct advantages which make it available when the agglutination method is impracticable. It is of particular value as a time-saving device in those instances in which the presence of other organisms together with the pneumococcus in the peritoneal exudate causes a delay of eighteen hours or more before the type of pneumococcus can be definitely established. It is therefore recommended as the method of choice in all cases. If desired, both the agglutination and precipitin methods may be applied to the same specimen of peritoneal washings.

63. **Bacteriologic Asepsis of Wound.**—Vincent found that of twenty infected cases treated with Dakin's solution or chloramin paste, seven were bacteriologically sterile. This proved that, in general, 35 per cent. of the patients thus treated become bacteriologically aseptic. This degree of asepsis is not necessary in order to suture the wound, the absence of bacteria in films being sufficient. Complete sterilization of wounds, can, therefore, now be accomplished.

64. **Chloramin-T Paste for Sterilization of Wounds.**—According to Daufresne, Dakin's toluene sodium p-sulphochloramid, mixed with sodium stearate, forms a paste sufficiently active and stable to be used in the treatment of wounds. He uses the following formula: neutral sodium stearate, 86 gm.; chloramin-T, 4 to 10 gm.; distilled water, 1.000 c.c. The preparation of chloramin paste is as follows: Boil a liter of distilled water and add 80 gm. of stearic acid. When this has melted, gradually add enough caustic soda to saponify the fatty acid and after complete solution add 4 to 10 gm. of chloramin-T, according to the concentration desired. The mixture is then placed in a mixing machine and shaken until thoroughly cooled. The paste is a smooth, snow-white cream. The principal disadvantage of this paste is its poor power of preservation; numerous trials showed that 10 per cent. of chloramin-T disappeared per month. The stability of the paste is limited by the stability of the solution of chloramin-T, because the antiseptic is in solution in the paste.

65. **Sterilization of Wounds with Chloramin-T.**—Under the conditions of experiments performed by Carrel and Hartmann chloramin paste maintains the asepsis of a wound already sterile, and sterilizes an infected wound. Under the same conditions chloramin paste causes no apparent modification of the cicatrization curve of an aseptic wound.

66. **Toxin and Antitoxin of and Protective Inoculation against Bacillus Welchii.**—The experiments presented by Bull and Pritchett appear to admit of one interpretation only; namely, that the Welch bacilli, under suitable conditions of growth, produce an active exotoxin, to which their pathogenic effects are ascribable. The toxic product, moreover, acts on the local tissues and the blood in a manner identical with the action of the cultures. With the toxic product animals may be immunized actively and yield an immune serum which neutralizes the toxin perfectly and in multiple proportion. The toxic bodies would seem to be at least two in number: one causing blood destruction, hence an hemolysin, and the other acting locally on the tissues and blood vessels, causing edema and necrosis and probably exerting general toxic action in addition. The part each plays in bringing about the lethal effect seems to be determined by the manner of inoculation: to bring out the hemolytic action intravenous injection is indicated; to bring out the locally destructive action, subcutaneous or intramuscular injection is required.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

June, IX, No. 9

67 *Action of Sodium Citrate on Isolated Intestine. W. Salant and E. W. Schwartze, Washington, D. C.—p. 497.

68 *Action of Succinate and Its Hydroxy Derivatives on Isolated Intestine. W. Salant, C. W. Mitchell and E. W. Schwartze, Washington, D. C.—p. 511.

69 *Production of Renal Changes by Oil of Chenopodium and Fatty Oils, and Protective Action of Diet on Kidney. W. Salant and R. Bengis, Washington, D. C.—p. 529.

67. **Action of Sodium Citrate on Isolated Intestine.**—Salant and Schwartze found that a solution of hundredth-normal sodium citrate causes an increase in the force of the rhythmic contractions of the small intestine of the rabbit, the rate being reduced at the same time. A similar effect was observed with two-hundredth-normal sodium citrate, but it was less pronounced and not as constant. Still weaker concentrations were only rarely effective. Concentrations greater than hundredth-normal produced depression of contractility, almost complete inhibition being caused by tenth-normal sodium citrate. Recovery was observed in all cases after washing with Locke's solution. Depression only was observed when the large intestime of the rabbit was exposed to the action of different concentrations of sodium citrate. Depression of the small, as well as of the large intestine of the cat, was produced by sodium citrate in all concentrations above four-hundredth-normal. Weaker solutions had no effect. The action of sodium citrate is probably due to the stimulation of the sympathetic nervous structures.

68. **Action of Succinate on Isolated Intestine.**—In the experiments reported on by the authors, strong and medium concentrations of sodium succinate generally caused stimulation of the intestines, the effect on the small intestines being more marked. Strong concentrations of malate cause depression of the entire intestine, but weaker solutions may cause moderate stimulation of the small intestine and depression of the large intestine. Solutions of twenty-fifth to four-hundredth-normal concentrations of levotartrate cause stimulation of the small intestine and depression of the large intestine. Dextrotartrate causes depression of the large and of the small intestines with higher concentrations; with medium concentrations it may cause occasional stimulation only of the small intestine, but no change was observed in the large intestine. Solutions of hundred-normal mesotartrate, as well as of the racemate, may cause moderate stimulation of the small intestine. Depression of the large intestine is caused by all of the hydroxy derivatives, the action being increased with the number of the hydroxyl groups. Locke's solution plus tenth-normal sodium chlorid causes depression of the intestines. When twenty-fifth-normal is added, this effect is very moderate and is inconstant. Smaller quantities of salt do not affect contractility. The response of the large intestine to hypertonic solutions is more pronounced than that of the small intestine.

69. **Production of Renal Changes by Oils.**—According to Salant and Bengis the administration of the oil of chenopodium by mouth and subcutaneously may be followed by renal disturbances in rabbits fed exclusively on oats. Similar effects were caused by several fatty oils such as cottonseed oil, castor oil, olive oil and cocoanut oil when given by mouth, but not when injected subcutaneously. No evidence of impaired kidney function was obtained when the same, or even larger, doses were administered to rabbits on a diet of carrots. The results obtained with the oil of chenopodium are attributed by the authors to malnutrition of the kidney due to lessened blood supply. The changes following the injection of fatty oils are accounted for by assuming that the products of hydrolysis of the oils, especially the glycerin, might cause local irritation and congestion, thus favoring the absorption of poisonous products from the intestine which would cause renal irritation. The protective action of carrots might be due to the inhibition of the development of nephritic poisons in the intestine.

Journal-Lancet, Minneapolis

July 1, XXXVII, No. 13

70 Methods of Graphically Recording Tremors, Clonus and Reflexes by Means of Tremograph. R. E. Morris and H. W. Woltmann, Minneapolis.—p. 423.

71 Practical Value of Roentgen Ray in Gastro-Intestinal Diagnosis. H. S. Willson, Minneapolis.—p. 428.

72 Roentgen Diagnosis of Nontuberculous Diseases of Lungs. A. B. Moore, Rochester.—p. 430.

73 Early Roentgen Diagnosis of Pulmonary Tuberculosis. F. S. Bissell, Minneapolis.—p. 431.

74 Pylorospasm in Infants. J. P. Sedgwick, Minneapolis.—p. 437.
75 Tuberculosis and War. P. L. Benjamin, Minneapolis.—p. 442.
76 Simple Method of Removing Foreign Bodies. H. W. Stone, Wayzata.—p. 443.
77 Angioma and Radium. G. B. New, Rochester.—p. 445.

Journal of Cutaneous Diseases, Boston

May-June, XXXV, No. 5

78 Experimental and Clinical Studies of Toxicity of Dioxydiamino-Arsenobenzol Dichlorhydrate. J. F. Schamberg, J. A. Kolmer and G. W. Raiziss, Philadelphia.—p. 286.
79 Case of Granuloma Pyogenicum and High Blood Pressure. D. W. Montgomery and G. D. Culver, San Francisco.—p. 338.
80 Congenital Ichthyosiform Erythrodermia. G. M. MacKee and I. Rosen, New York.—p. 343.
81 Histopathology. W. J. Heimann, New York.—p. 362.

Laryngoscope, St. Louis

June, XXVII, No. 6

82 Case of Bilateral, Congenital, Osseous Atresia of External Auditory Canal, with an Exceptionally Good Functional Result Following Operation. L. W. Dean and T. R. Gittins, Iowa City, Iowa.—p. 461.
83 Lung Abscess as Sequel to Tonsillectomy. I. Frank, Chicago.—p. 474.
84 Extensive Carcinomatous Involvement of Accessory Sinuses of Nose with Intracranial Invasion. M. A. Warlow, Philadelphia.—p. 484.
85 Case of Safety Pin in Esophagus Displaced During Anesthesia and Lodging in Postnasal Space. A. S. Kaufman, Philadelphia.—p. 487.
86 Case of Membranous Infection of Nose and Antrum, Resulting Fatally. A. S. Kaufman, Philadelphia.—p. 488.
87 Removal of Tonsils as Prophylactic Measure in all Children of Four Years of Age. R. W. Perry, Seattle.—p. 490.
88 Case of Rare Foreign Body (Ring) in Oral Cavity. J. L. Lougee, Boston.—p. 497.
89 Fibroma of Left Nasal Chamber, with Extension into Postnasal Fossa; Report of Case. T. C. Worthington, Baltimore.—p. 499.
90 Sinus Disease with External Deformity Cured by Paraffin Injection. S. G. Dabney, Louisville, Ky.—p. 507.
91 New Nasal Septum Splint. M. F. Butler, Philadelphia.—p. 511.
92 Electric Noise Apparatus. M. Lubman, New York.—p. 512.

Medical Record, New York

June 30, XCI, No. 26

93 Complications of Acute Middle Ear Suppuration, and Difficulties of Making Diagnosis in Certain Cases. G. Bacon, New York.—p. 1127.
94 Radium in Carcinoma of Upper Air Passages. D. B. Delavan, New York.—p. 1130.
95 Diatheses in Childhood. J. Epstein, New York.—p. 1132.
96 Tonsil. D. P. Platt, Stamford, Conn.—p. 1134.
97 Physicians' Influence in Charity Work. T. D. Crothers, Hartford, Conn.—p. 1135.
98 Report of One Hundred Successful Operations on Anal Sphincters for Treatment of Various Complications. C. A. Bucklin, Glasgow, Scotland.—p. 1137.
99 Shame and Physician. J. H. Marcus, Atlantic City, N. J.—p. 1139.
100 Embolism of Central Artery of Retina. F. P. Hoover, Jacksonville, Fla.—p. 1141.
101 Trench Foot. B. Sherwood-Dunn, Paris.—p. 1143.

New York Medical Journal

June 30, CV, No. 26

102 Summary of Wassermann Tests Done During 1916 in Philadelphia General Hospital. R. C. Rosenberger, Philadelphia.—p. 1233.
103 Effects of Fatigue on Aged. A. L. Fisk, New York.—p. 1235.
104 Plea for Early Diagnosis and Treatment of Acute Catarrhal Appendicitis. M. Lewson, New York.—p. 1236.
105 Case of Bilateral Spontaneous Nontuberculous Pneumothorax with Necropsy. A. Meyer, New York.—p. 1238.
106 New Method for Auditory Percussion of Chest. R. M. Alexander, Reading, Pa.—p. 1242.
107 Use of Nitrous Oxid Analgesia in Obstetrics with Description of Simple Apparatus. T. H. Cherry, New York.—p. 1244.
108 Physiologic Therapy in Gonorrhea. A. G. Geyser, New York.—p. 1247.
109 Personal Service to Insane. J. F. W. Meagher, New York.—p. 1248.
110 Infantile Pyloric Stenosis. J. Epstein, New York.—p. 1251.

Surgery, Gynecology and Obstetrics, Chicago

July, XXV, No. 1

111 Use of Free Grafts of Whole Thickness Skin for Relief of Contractures. J. S. Davis, Baltimore.—p. 1.
112 *Pulmonary Fat Embolism—Frequent Cause of Postoperative Surgical Shock. W. W. Bissell, Rochester, Minn.—p. 8.
113 *Relation of Acidosis to Anesthesia. G. A. Caldwell and M. Cleveland, New York.—p. 22.
114 *Results Following Treatment of Pelvic Inflammatory Lesions by Surgical Measures. J. G. Clark and C. C. Norris, Philadelphia.—p. 33.
115 Spinal Anesthesia. C. C. Yount, Panama City, Panama.—p. 40.
116 Cholecystectomy. M. G. Seelig, St. Louis.—p. 45.
117 Benign Tumors of Intestines with Special Reference to Fibroma; Report of Case. E. L. King, New Orleans.—p. 54.
118 Fatty Tumors of Uterus; Report of Case. C. W. W. Elkin and S. R. Haythorn, Pittsburgh.—p. 72.
119 *Study of One Hundred Consecutive Fractures of Shafts of Both Bones of Forearm with End-Results in Ninety-Five. A. O. Whipple and F. B. St. John, New York.—p. 77.
120 Cardiolysis; Additional Case. J. E. Summers, Omaha.—p. 92.
121 Tuberculosis of Hip-Joint. J. K. Young, Philadelphia.—p. 95.
122 Hydatid Cyst of Liver; Report of Two Cases. G. B. Johnston and M. Willis, Richmond, Va.—p. 101.
123 Kondoléon Operation for Relieving Lymphatic Blocking; Report of Case. R. S. Barber, Brooklyn.—p. 104.
124 Diagnosis and Treatment of Tumors of Urinary Bladder. F. M. McCallum and C. K. Smith, Kansas City, Mo.—p. 105.
125 Congenital Rectovaginal Fistula; New Operation. C. A. Potter, St. Joseph, Mo.—p. 110.

112. **Pulmonary Fat Embolism.**—During the past eight months Bissell has observed six instances of fatal postoperative fat embolism in the necropsy service of the Mayo clinic. Three of these followed breast amputation; one, ventral herniotomy; one, craniotomy for brain tumor; and one, laminectomy for spinal cord tumor.

113. **Relation of Acidosis to Anesthesia.**—In thirteen cases receiving 20 to 40 gm. of sodium bicarbonate in the twelve hours prior to operation, the anteoperative urine showed neither acetone nor diacetic acid, while 76 per cent. showed acetone postoperatively, and 69 per cent. showed diacetic acid. The elimination of acetone and diacetic acid postoperatively with none in the anteoperative urine was accompanied by a greatly increased alkalinity of the blood, up to 53 mm. or even 59 mm. in some cases. In nine cases, in which the patients received 20 gm. of sodium bicarbonate in 500 c.c. of 4 per cent. glucose solution immediately after operation, Caldwell and Cleveland found the elimination of acetone and diacetic acid, only slightly different from that of the untreated cases. The carbon dioxid tension in this series was well over 40 mm. and in one case as high as 54 mm. in the blood taken after operation. These treated cases followed closely the untreated cases in all respects except the high carbon dioxid tension.

114. **Treatment of Pelvic Inflammatory Lesions.**—From a study of more than 500 cases in which the postoperative and remote results of surgical intervention in pyogenic infections in the fallopian tubes were considered, Clark and Norris conclude that a course of conservative preparatory treatment decreases mortality, and enhances the chances for securing a good functional restoration of the pelvic organs. In all cases of acute infections of the fallopian tubes they advise that the patient should be kept under observation until the course of the case is defined. (*a*) In the greater majority the temperature subsides, the pain disappears, the tubal enlargements decrease to impalpable proportions, and if the attack is a primary one, the patient may be given a respite from operation until a recurrent attack supervenes. Even under these recurrent conditions the conservative policy is again pursued until subsidence takes place a second time, when an abdominal operation is advised, with a view to treating existing conditions to the best possible advantage. Usually both tubes are removed and the ovaries are conserved. (*b*) If, under the conservative plan, the symptoms do not abate and the tube continues to enlarge, vaginal drainage is instituted, either by direct incision into the culdesac or through the guidance of an abdominal incision.

In the purulent lesions of the tube, all operative procedures are attended with a higher mortality and a greater morbidity, whereas under a conservative waiting treatment a patient will seldom die during an acute infection. In all hazardous cases the increasing severity of the symptoms and the enlargement of pelvic masses give ample warning, and permit of a simple drainage operation that will tide the patient over the danger. Conservative operative procedures instituted with a view to restoring a closed fallopian tube seldom restore fecundity. The safer policy usually is to remove the tubes by a wedge-shaped cornual excision in all doubtful cases,

thus disregarding any attempt at restoration of fecundity. Hysterosalpingo-oophorectomy in sexually mature women, the subjects of chronic infections of the uterus and adnexa, is followed by a lower mortality and a greater certainty of restoration to health than are possible after conservative operations. Conservative operations employed with a view to preserving ovarian tissue should be limited chiefly to women under 30 years of age. The routine drainage of pus tubes through an abdominal incision is an unsatisfactory procedure from every standpoint, and should not be resorted to if it can possibly be avoided.

119. **Forearm Fractures: End-Results.**—Using the end-results in this series of 100 cases as the standard, Whipple and St. John are convinced that open reduction for fracture of both bones of the forearm in children is unnecessary. Reduction should be done at the earliest possible time. To "wait for the swelling to go down" is bad surgical practice because it is ignoring a cardinal principle of the repair of wounds in bone as well as in soft parts. Fluoroscopic examination should be used to determine the necessity for reduction and to insure the best reduction with the least trauma. Reduction and immobilization should be done with the patient under general anesthesia. Immobilization should prevent rotation of the forearm. The position of midpronation and midsupination is entirely satisfactory and comfortable except in fractures of the upper third, where full supination with the elbow in flexion is advisable. Early, gentle massage and active motions are advocated, but should be performed under the direct supervision of the surgeon. Forced passive motions, which cause the patient pain, are strongly condemned. Practically all cases of fractures of both bones of the forearm in children (uncomplicated by extensive trauma due to compound fractures and resultant infection) will have very satisfactory results, anatomically and functionally, with conservative treatment.

Tennessee State Medical Association Journal, Nashville

June, X, No. 2

126 *Syphilis and Internal Medicine. J. S. McLester, Birmingham, Ala. —p. 51.
127 Simplified Artificial Feeding. J. M. Lee, Nashville.—p. 58.
128 Management of Breast Feeding. O. W. Hill, Knoxville.—p. 62.
129 Patent Foods. O. H. Wilson, Nashville.—p. 67.
130 Treatment of Trachoma with Bulgarian Bacillus Culture. J. P. Crawford, Nashville.—p. 71.
131 Inflammation of Conjunctiva Resembling Trachoma. C. J. Broyles, Johnson City.—p. 73.

126. Abstracted in THE JOURNAL, April 28, 1917, p. 1287.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

June 9, I, No. 2945

1 *Status Lymphaticus from Clinical Standpoint. H. C. Cameron. —p. 753.
2 Case of Obstruction of Ureter by Abnormal Renal Vessel. R. P. Rowlands.—p. 755.
3 Three Cases of Ureteral Obstruction. G. S. Gordon.—p. 758.
4 Sanatorium Roll of Honor. N. D. Bardswell.—p. 759.
5 Pathology of Barcoo Rot (Veld Sore?). C. J. Martin.—p. 761.
6 Simple Device for Growth of Anaerobes on Plates. H. Henry. —p. 762.
7 Melena and Hematemesis Neonatorum. B. Solomons.—p. 763.
8 Strangulation Following Reduction (Left Inguinal Hernia); Laparotomy; Recovery. G. A. Harrison.—p. 763.

June 16, No. 2946

9 *Development of British Surgery in Hospitals on Lines of Communication in France. G. H. Makins.—p. 789.
10 *Some Anaerobes Found in Wounds and Their Mode of Action in Tissues. H. Henry.—p. 806.

1. **Status Lymphaticus from Clinical Standpoint.**—It is suggested by Cameron that the lymphoid overgrowth so commonly found postmortem in children is no more than an enlargement from the irritation of chronic catarrh in the corresponding mucous membranes. Such children during life show evidence of faulty nutrition or infection of all epithelial structures, hair, skin, teeth, conjunctiva and the mucous membranes of respiratory and intestinal tracts. There is usually present a characteristic wateriness of the tissues, which is dependent to some extent on excessive carbohydrate feeding, and which is the main cause of the vulnerability to infection. Local treatment of the catarrhs alone is likely to be inefficacious, and must be accompanied by a systematic attempt to achieve dehydration and improve the nutrition of the tissues. The status catarrhalis in the sense defined is a predisposing cause of rheumatism and tubercle, and carries with it a liability to sudden death at the onset of virulent infections, such as pneumococcal infections, measles or diphtheria.

9. **British Surgery on Lines of Communication.**—Speaking of wounds of the joints, Makins says, that the experience gained in recent previous wars regarding the treatment of wounds of the joints has proved of small avail in the present campaign, because it was obtained almost entirely from observation of the lesions produced by rifle bullets, which had proved themselves of minor gravity and capable of healing spontaneously with good results when subjected to simple treatment founded on the sovereign principle of rest. The problem of dealing with grossly infected joints, often enclosing a septic irregular fragment of shell and dirty clothing, perhaps further complicated by extensive fractures of the cancellous articular extremities of the bones, was therefore practically a new one to the surgeons engaged. Some definite facts have emerged from the first flood of difficulties encountered, and these may be shortly summarized as follows: 1. The wound of the soft parts clothing the joints is vastly more difficult to deal with than the articular cavity itself, and demands the most scrupulous care on the part of the surgeon. 2. The synovial capsule itself is capable of dealing unaided with an infection often of a really serious grade. 3. A strong tendency exists for an infection to localize itself, and the remaining portion of the capsule may remain free. 4. Drainage in the sense of the insertion of large tubes left in position for days or more is not only useless but also harmful. 5. That a gunshot wound of a joint cannot be dealt with too early, and with proper treatment forms one of the best subject wounds for primary suture. 6. That following the primary surgical intervention the main principle to be observed is that of complete rest gained by immobilization and extension.

General appreciation of these facts has resulted in the conclusion that a large majority of the joint injuries should be subjected to their chief active surgical procedure in the hospitals of the advanced lines, and hence the general hospitals at the present time receive only cases well on the road to recovery, or such as present the more difficult problem of dealing with established infection and suppuration.

10. **Anaerobes Found in Wounds.**—The pathologic processes in an infected wound, Henry says, are characterized by two main features—the production of gas and the death of tissue. Each group of anaerobes has its share in these processes, and the successive stages by which an anaerobe infection develops may be thus summarized: 1. The initial trauma in determining the death of tissue establishes a focus for growth. This is characterized by the latent period, which precedes any obvious clinical signs of anaerobic infection. 2. The first active phase of anaerobic infection consists in the development of the rapidly growing saccharolytic organisms, of which *B. welchii* is the chief. It is because of the richness of muscle in fermentable carbohydrate that this tissue provides such favorable conditions for the growth of organisms of the saccharolytic type. Their development results in the production of acid and gas. The gas accumulates first in the muscle and reaches the subcutaneous tissues by escape from the muscle. The pressure produced by gas and also by inflammatory edema fluid leads to an anemic condition in the tissues surrounding a wound, and this change initiates the second active period of anaerobic invasion. The muscle in the saccharolytic period is of a brick red color. 3. The second phase of anaerobic infection in a wound consists in active proteolytic digestion. This is characterized by death and digestion of the tissues. The process is accompanied by the formation of sulphuretted hydrogen and of volatile substances, which give the penetrating putrefactive odor so typical of the

later stages of infection. The previously red muscle becomes soft and different. It may be stained black by a sulphid of iron formed by the interaction of sulphuretted hydrogen with the iron released from broken down hemoglobin. The toxemia which develops at this period results from the absorption of toxic substances produced in the breaking down of the protein molecule, and cannot be attributed to the acid which is formed in the breaking down of the carbohydrate molecule. 4. The final phase is that of successful bacterial invasion of the blood stream. It occurs in most cases just at, or immediately preceding, the death of the individual.

Indian Medical Gazette, Calcutta

May, LII, No. 5

11 Gunshot Wounds in Bengal Stationary Hospital, Amara, 1915-1916. A. H. Nott.—p. 154.
12 Uncinariasis and the War Loan. C. Lane.—p. 161.
13 Uncinariasis and Hematinics; Report of Case. D. Perera.—p. 164.

Journal of Tropical Medicine and Hygiene, London

June 1, XX, No. 11

14 Keratodermia Punctata. A. J. Chalmers and A. Kamar.—p. 121.

Lancet, London

June 9, I, No. 4893

15 *Digitalis in Auricular Fibrillation. A. R. Cushny.—p. 865.
16 Treatment of Some Common War Neuroses. E. D. Adrian and L. R. Yealland.—p. 867.
17 Chylohemothorax from Wounds Involving Thoracic Duct. T. R. Elliott and H. Henry.—p. 872.
18 Menace of Morphin to China. W. Lien-Teh.—p. 874.
19 Experimental Production of Tuberculous Peritonitis in Guinea-Pigs Previously Exposed to Roentgen Rays. J. J. McGrath.—p. 875.
20 Operation for Loose Semilunar Cartilage. R. P. Rowlands.—p. 877.
21 Three Cases of Septic Infection Due to Otitis Media. W. Wilson and J. W. Barrett.—p. 878.
22 Cases of Ligature of Common Carotid Artery. J. J. M. Shaw.—p. 879.
23 Double Dislocation of Jaw Simulating Fracture of Skull. E. C. Hare and S. J. Cole.—p. 880.
24 Case of Ulnar Paralysis; Ulnar Median Anastomosis; Recovery. J. K. Haworth.—p. 880.

June 16, No. 4894

25 Paratyphoid Infections. C. H. Miller.—p. 901.
26 Amputations Considered from Artificial Limb Point of View. T. Openshaw.—p. 905.
27 Neurasthenia in Soldiers of Home Forces. F. W. Burton-Fanning.—p. 907.
28 *Treatment of Neuritis. H. Sainsbury.—p. 911.
29 Freud's Psychology of Unconscious. W. H. R. Rivers.—p. 912.
30 Salvarsan and Intramin with Reflections on Chemotherapy. J. E. R. McDonagh.—p. 914.

15. **Digitalis in Auricular Fibrillation.**—In the account Cushny gives of the action of digitalis in auricular fibrillation the effective action is the blocking of impulses from the auricle. Another result of digitalis on the animal heart is the increase in the strength of contraction. Whether this plays any part in the improved efficiency of the heart cannot be answered at present, as one has no means of measuring accurately the contraction of the human heart. Cushny says that undoubtedly the movement is stronger, but this may be due to the slower beat, which allows of a better recovery in the period of rest. In the perfused animal heart the systolic increase occurs at least as soon as the lessened conduction, and this seems evidence in favor of the improved circulation in patients also depending in part on the increase of systole. But the argument, Cushny admits, is not convincing, since in perfusion experiments the dose of digitalis is necessarily larger than that used in man in order to bring on the action within the time limits of an experiment.

28. **Treatment of Neuritis.**—The treatment employed by Sainsbury was recommended to him by Dr. Hugh Wingfield. It consists in the direct application of the strong hydrochloric acid of the B. P., in common parlance fuming hydrochloric acid, to the skin, along the line of the inflamed and painful nerve. The acid in question contains 31.79 per cent. of gaseous hydrochloric acid and has a specific gravity of 1.160; this acid is capable of safe application to the bare skin. The modus operandi is first to mark out the line of the nerve pain and tenderness as it happens to present itself in the individual. In general it has been Sainsbury's practice to carry a broad line of application, some 1½ inches across, straight down the back of the thigh from the gluteal fold to the popliteal space; another application of like breadth for about 3 inches behind the head of the fibula along the oblique course of the external popliteal nerve at this spot; lastly, for some 5 to 6 inches behind the external malleolus directly downward; and below the malleolus obliquely on to the dorsum of the foot. The extent of the tenderness will guide more or less as to the extent of the application. A wad of cottonwool, firmly compressed into a knob of the size of the knuckle of the middle finger, is used to suck up the acid, of which about half a dram to a dram will be required. The charged wad, grasped by the finger and thumb (previously petrolatumed), is then carried gently along the line of application above described. The degree of firmness may be increased subsequently if necessary, and the part may be painted two or three times at one sitting if the skin bears the acid well; the first application should be light and single in order to gage the sensitiveness of the part, and if the integument happens to be thin and delicate it should receive correspondingly light treatment. A considerable smarting is sometimes complained of; in other cases little more than a tingling or sense of mild heat is felt. After the application a light covering may be thrown over the part till the skin is dry. The smarting soon passes off and the slight redness induced disappears also; no dressing is required. Rarely, in delicate skins, is a papular rash excited; it should be allowed to subside before reapplication of the acid. Blistering has not been observed. The treatment may be repeated twice a week if need be, perhaps oftener; it should be continued so long as the pain and tenderness continue. Massage may with advantage supplement the treatment and particularly if there has been obvious wasting.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

January-March, VI, No. 1-3, pp. 1-96

31 *Disease of Ovaries or Tubes Complicating Pregnancy. A. Brindeau.—p. 1.
32 *Radiotherapy of Uterine Cancer. S. Recasens (Madrid).—p. 34.
33 Compulsory Notification of Abortions. L. Tissier.—p. 56.
34 *Influenza in 1916 from Obstetrical Standpoint. E. Chomé.—p. 66.

31. **Salpingo-Ovaritis Complicating Pregnancy.**—Brindeau has found records of ninety-three cases of this kind, and he thinks they are more common than this but are sometimes overlooked. He has encountered twelve such cases himself, which he describes in detail, and tabulates the details of the other ninety-three. Old salpingitis and ovaritis may not prevent conception, and if long extinct they may not give trouble during pregnancy. But sometimes they are responsible for adhesions, pains, displacement of the uterus, torsion of the tubes or extra-uterine pregnancy. If there is a spark still alive in them they may entail septic trouble. This occurs early in pregnancy in about 31 per cent. of the cases; in the others usually not until the close of the pregnancy or in the puerperium. Abortion and delivery are peculiarly liable to set the infectious mechanism in action. The peritonitis is an actual perforation peritonitis in such cases. Treatment can be only surgical, and the sooner the better as the only means to save the mother and allow the pregnancy to continue. In the forty-four cases tabulated, 86 per cent. of the women were saved by the operation; in a parallel series without operation only 38 per cent. survived. The operative measures included five colpotomies with 60 per cent. recoveries; ten salpingectomies with 90 per cent. recoveries; four hysterectomies with 50 per cent. recoveries; eleven bilateral castrations, and five with appendicectomy plus salpingectomy with 100 per cent. recoveries.

32. **Radiotherapy for Uterine Cancer.**—Recasens writes from Madrid to extol the advantages of combined radiotherapy of cancer of the uterine cervix. He has applied it in 200 cases during the last three years, all his experience showing that the cancer cells are so peculiarly sensitive to radio-active substances that 70 per cent. of his inoperable cases were cured and 100 per cent. of the operable. The interval since in the inoperable cases has been over two years in 27 (out of 47), and over one year in 45 out of 79. For cancer of the body

of the uterus, operative removal is preferable when the woman is not fat. In the fat women we can count on curing 50 per cent. by the combined radiotherapy. Various combinations were tried but the easiest and most effectual was to apply the radioactive substance for not longer than twenty-four hours at first, at eight day intervals, gradually shortening the exposure and lengthening the intervals to two or three weeks. Roentgen exposures are given with it to act on the deeper tissues and lymphatics which escape the influence of the radioactive substance. He uses aluminum filters, 1.5 mm. thick, at first and later 7 or 8 mm. thick, wrapped in gauze or rubber. When the doses were too large, the filtration inadequate, or the intervals too short, during his early tentative experiences, necrotic processes were observed resembling a Roentgen-ray burn, and not healing for four or five months. It is important to distinguish this trophic trouble from the cancerous process as the former demands suspension and the other, continuation of the exposures.

34. **Influenza from the Obstetric Standpoint.**—Chomé comments on the gravity of influenza when it occurs in epidemic or endemic form in a maternity. In many cases it runs a septicemic course, with secondary localization in the peritoneum. At the Tarnier maternity last year eighteen parturients developed influenza and six of them died. In two cases the death seemed to be due to pulmonary complications; in the other four to septicemia with peritonitis.

Bulletin de l'Académie de Médecine, Paris

May 22, LXXVII, No. 21, pp. 655-682

35 *Danger of Malaria and Yellow Fever Getting a Foothold in France. R. Blanchard.—p. 657.
36 *Abortive Treatment of Erysipelas. Capitan.—p. 669.
37 Apparatus for Endo-Urethral Diathermia. E. Roucayrol.—p. 673.
38 *The Pupil Reactions. (Les lois de l'isocorie et de l'anisocorie normales. Corollaire et variations pathologiques.) A. Tournay. —p. 680.

35. **Danger of Malaria and Yellow Fever in France.**—Blanchard states that the intermediate mosquito hosts of these diseases are found in southern France, and that a committee has been organized to determine which sections are free from them, so that the convalescents can be directed there. He remarks that the English troops in Macedonia did not suffer from malaria by any means to the extent of the French troops. The British officers considered the Macedonia campaign a "medical war," and gave the medical officers full charge of it, with highly favorable results for the health of the troops. "Would that it had been the same in the French army!" he exclaims.

36. **Abortive Treatment of Erysipelas.**—Capitan found all measures ineffectual until he began to give a subcutaneous injection every day of 50 c.c. of antistreptococcus serum. In very severe cases he gave an injection morning and evening. These doses were kept up for two, three or four days; in one case for five days. In another case very severe erysipelas of the face, with much swelling, disappeared within forty-eight hours, after two injections of 60 c.c. A quinin tonic is taken internally at the same time. There were no accidents from the serotherapy but quite frequently there was a serum rash, with pains in the joints, sometimes intense. These by-effects developed about five days after the last injection of serum. He makes a point of injecting 2 c.c. of the serum four hours before the main injection, to ward off any danger of anaphylaxis.

38. **Laws of Pupil Reaction.**—Tournay has found that the pupils react alike in normal conditions when the eyes look forward, but when looking to one side the pupil on that side becomes larger than the other in a few seconds, while the other contracts.

Paris Médical

May 26, VII, No. 21, pp. 421-436

39 Official Welfare Work for Children in Belgium. R. van Roy. —p. 431.
40 The Normal Upper Radio-Pronator Reflex. E. Landau.—p. 426.
41 *The Cough with Heart Disease, Especially Hyposystole or Asystole. A. Blind and R. Ricard.—p. 428.
42 Symptoms from Injury of the Neck Back of the Parotid Gland. (Syndrome de l'espace rétro-parotidien posterieur.) M. Villaret.—p. 430.
43 Roentgen Localization and Extraction of Projectiles. B. de Laborie.—p. 431.
44 *Postoperative Albuminuria. A. Satre.—p. 434.
45 Activation of Cobra Venom by Serum of Nephritics. G. Blechman.—p. 434.
46 Albuminuria in Incipient Tuberculosis. G. Blechman.—p. 435.

41. **The Cardiac Cough.**—Blind and Ricard warn that the cough with heart disease must not be mistaken for incipient tuberculosis. There is no doubt that cases of this kind have sometimes been sent by mistake to sanatoriums for the tuberculous, and the subsidence of the cough under repose and tonics has improved the statistics from the institution. There is little or no expectoration with the incessant spasmodic cough in question; it is most frequent at night, as a rule, and is not soothed by cough medicines. The cough is aggravated by sodium benzoate, and is favorably influenced only by cupping, a milk diet, theobromin or digitalis. It may appear in the young with valvular disease before there is any dyspnea, tachycardia or arrhythmia. This cough develops more frequently with mitral than with aortic valvular trouble, especially those of rheumatic origin. The cause is a localized subacute edema of the lung, and this subsides under heart tonics.

44. **Postoperative Albuminuria.**—Satre found albuminuria most constant after operations on the abdominal, genital and urinary organs. In case of preexisting kidney lesions rapid operating is necessary. He declares that the general anesthesia kept up for an hour or longer might prove fatal just as well without any operation, other things being equal. He noticed albuminuria after accidental traumatism, showing that the shock is the main factor rather than the anesthetic in postoperative albuminuria. In four instances he witnessed the subsidence of preexisting albuminuria after an operation.

Presse Médicale, Paris

May 17, XXV, No. 27, pp. 273-280

47 *Overlooked Inherited Syphilis. R. Sabouraud.—p. 273.
48 *Diphtheria Antitoxin in Powder Form for Local Treatment of Bacilli Carriers. R. Benard.—p. 275.
49 Congenital Stricture of the Urethra. Artus.—p. 276.
50 Geometric Chart for Direct Localization of Projectiles. H. Deverre.—p. 277.

May 21, No. 28, pp. 281-296

51 *Fate of Autoplastic Bone Grafts. L. Bérard.—p. 281.
52 *Operative Treatment of Varicocele. G. Lerda.—p. 284.
53 The Pulmonary Sequels of Pneumonia. M. Letulle.—p. 288.
54 *Disinfection of Wounds by Electrolysis of Circulating Therapeutic Fluid under Continuous Aspiration. G. Chick and H. Miniot. —p. 295.
55 General Anesthesia with Ethyl Chlorid in War Surgery. M. Boureau.—p. 296.

47. **Overlooked Inherited Syphilis.**—Sabouraud classifies in five groups the children with inherited syphilis. The first three groups are familiar to all, but the others are constantly overlooked, and yet they comprise more children than all the others combined. He has encountered families with many children and no miscarriages in which every child was stamped with the inherited taint, even when the father had been long and thoroughly treated. He makes a practice of applying the Wassermann test in all dubious affections in children, and states that those who do this will be appalled at the findings. Human beings naturally are harmoniously proportioned, and when this is not the case, some inherited taint of one kind or another is responsible. All those who visibly fail to conform to this law of harmonious development are suspicious, and the suspicion of syphilis is confirmed by the discovery of supernumerary cusps on the inner side of the upper first large molars—the tubercle of Carabelli. All the dental anomalies of syphilis had been described by dentists long before their connection with syphilis was recognized by practitioners. Children with these extra cusps are exceptionally subject to skin diseases, spina venosa, etc., the inherited taint opening the portals to affections of all kinds. The Wassermann test shows that among the old syphilitics who consider themselves cured, there are now about thirty who are plainly not cured to every one that is actually cured. Syphilitics should not be allowed to marry until they have had a negative Wassermann reaction for two or three years

after treatment has been suspended. Otherwise they will beget children whose teeth will show the inherited taint which will render them easy victims to any diseases they may chance to encounter. A third or half of those children who are repeatedly under the doctor's care have inherited syphilis.

48. **Treatment of Diphtheria Bacilli Carriers.**—Benard insufflates antitoxin in the form of a powder and states that this has rapidly freed the throat of the diphtheria bacilli, even in old carriers. It seems the easiest, simplest and most effectual method known to date. None of the children with diphtheria became carriers in the fifteen cases thus treated, and four convalescent adult carriers and fourteen healthy carriers were also "cured" in a short time. The city of Nevers had two school epidemics of diphtheria last year, and Benard organized a special class of the carriers alone. This "carrier school" opened with twenty-two scholars, but in two weeks it had to be closed as under the insufflation treatment no further diphtheria bacilli could be found. One child had shown diphtheria bacilli in smears taken at eleven different examinations in the course of several months. Twelve days after the insufflation treatment was begun, the second of two negative examinations permitted his discharge. The formula used was antitoxin powder 10 gm.; 0.9 gm. novarsenobenzol; 1 gm. pulverized benzoin, and 100 gm. bismuth carbonate. The powder is blown in three or four times a day, twice through each nostril and into the throat.

51. **Fate of Bone Grafts.**—Bérard reproduces the roentgenograms taken at intervals through several years in two cases in which a graft 10 or 11 cm. long had been implanted after fracture of the radius or tibia. The graft was taken from the fibula on the other side. In the radius case the tissues were healthy and the graft, freed from periosteum, healed perfectly in place, and the limb is strong. The tibia in the other case had been fractured four times and conditions were pathologic. The graft with its periosteum healed in place and the leg was used normally for three years. Evidences of dystrophy became apparent then and the graft was absorbed, with pathologic fracture. The ultimate outcome of autoplastic bone grafts, with or without periosteum, thus seems to depend on the healthy condition of the parts receiving the graft.

52. **Varicocele.**—Lerda comments on the necessity for individualizing operative treatment for varicocele according to the conditions encountered. Conservative scrotectomy, taking up folds in the vaginalis, is sufficient in cases in which the nervous troubles predominate or the scrotum is stretched and flabby without a tendency to hernia. In all other cases he advises operating through the inguinal canal, and he gives an illustrated description of the different technics that may be applied. When there are angiosclerotic lesions and lesions of the testicle with atrophy of the cremaster, he applies the Nahrat-Nilson method. When the dilatation of the veins is more pronounced than the sclerosis, and the fibromuscular layers seem strong, he applies the Carta-Mori method, that is, he slits the cremaster fascia into two side strips and shortens it by invaginating the upper portion into the lower, fastening it with a few stitches to the lesser oblique and the transverse muscles. When the varicocele is accompanied with hydrocele as a manifestation of inflammatory reaction on the part of the vaginalis, or cysts showing lesions in the epididymis, he applies his modification of Parona's method. The testicle is drawn out, a long rectangular flap with base below is cut in the vaginalis and the vaginalis is turned back and drawn up, the flap serving as a long handle reaching to the inguinal ring to which it is sutured. This suspends the testicle firmly and easily at the desired height.

54. **Electrolysis in Treatment of Wounds.**—The disadvantage of therapeutic electrolysis in treatment of wounds has always been that the electrolyzed fluid grows constantly more caustic, and hence acquires a corrosive action in time. This can be obviated by keeping up a constant flow of the fluid through the wound, aspirating out the irrigating fluid and not allowing it to stand in the wound. This preliminary communication from Tuffier's clinic states that experimental and clinical experiences with this method have been very favorable. The antiseptic is thus being constantly generated fresh in the depths of the infected cavity just where it is needed.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 26, XLVII, No. 21, pp. 657-688

56 *Improvised Orthopedic Devices for the Wounded. O. A. Hug. —p. 657.

57 *Experiences with Mercury Vapor Quartz Lamp. (Künstliche Höhensonne.) P. Sokolow.—p. 673.

June 2, No. 22, pp. 689-720

58 *Therapeutic Induced Pneumothorax in Treatment of Pulmonary Tuberculosis in the Pregnant. Van Voornveld.—p. 689.

59 The Sugar Content of the Blood the Criterion for Renal Diabetes. H. Ryser.—p. 703.

56. **Improvised Orthopedic Devices.**—Hug gives twenty-two half-page pictures showing the way in which contractures, ankylosis, traumatic talipes and other deformities can be corrected by a simple rope, pulley and weight device, applying traction along the lines where it is specially needed. In all the applications of this principle the limb above the point must be held immovable, buckled with a broad strap to a small table, for example. At night the limb should be partially immobilized in overcorrection.

57. **Mercury Vapor Quartz Light in Therapeutics.**—Sokolow writes from Zurich what he thinks is the three hundred and first article that has been published on this subject. He has used this form of phototherapy during the last fourteen months in sixty-seven cases of internal, skin or nervous affections, and reports "right good results." It failed in certain cases, so that it must be regarded, he says, as only one link in the chain of therapeutic factors at our disposal.

58. **Pneumothorax Treatment of Tuberculosis in the Pregnant.**—Voornveld expatiates on the advantages of inducing pneumothorax when a woman with active pulmonary tuberculosis becomes pregnant. This not only helps the woman herself, but by its damming up of the toxins generated by the tubercle bacilli, it permits the fetus to develop normally. One of Forlanini's early cases was a woman who became pregnant after she had been bearing for eighteen months an induced pneumothorax. The pneumothorax was maintained through the pregnancy and lactation period which all passed as under normal conditions. Combiaso in 1914 and Real in 1913 reported somewhat similar cases. Voornveld while physician in chief of the Turban sanatorium at Davos had a patient with severe and extensive left pulmonary tuberculosis, and six months pregnant. Tubercle bacilli and elastic fibers were numerous in the sputum, and the subfebrile temperature testified to the active process, and to the grave prognosis unless the pregnancy was interrupted or an artificial pneumothorax induced. He decided on the latter and the sputum soon lost the elastic fibers and bacilli. The pregnancy, delivery and lactation proceeded as under normal conditions. In order to secure this inactivation of the tuberculous process in the lung, he took special pains to determine and maintain the optimal conditions in respect to the amount of pressure and the size of the pneumothorax. As delivery approached, he kept up this optimal condition by repeated small reinjections, and as the uterus was evacuated he increased the pneumothorax to correspond, not giving the compressed lung any chance to expand. The danger for the lung from the straining during labor was materially mitigated by the interposition of the elastic pneumothorax. All this required close supervision of the patient, but it saved the child, and possibly the mother might not have come through otherwise. He regards this systematic pneumothorax treatment in proper cases as opening new perspectives for treatment of tuberculous pregnant women.

Gazzetta degli Ospedali e delle Cliniche, Milan

April 26, XXXVIII, No. 33, pp. 513-528

60 *Lumbar Hernia. G. Campora.—p. 513.

April 29, No. 34, pp. 529-544

61 Medicated Animal Charcoal in Dyspepsia. (Lo zimantrax nella terapia medica.) C. B. Farmachidis.—p. 529.

May 3, No. 35, pp. 545-552

62 *Recurring Rachitis. G. Radice.—p. 545.

63 True Spasm of the Pylorus. G. Ceresole.—p. 549.

60. **Lumbar Hernia.**—Campora describes a case of a large reducible hernia in the lumbar region in a man of 61. At the operation the hernial sac was found empty and the orifice was closed by suturing the edges of the muscles together.

Campora tabulates the details of sixty-six similar cases he has found on record since 1731. In three of the cases the hernia was bilateral; in one the kidney was involved in the hernia. In several cases the hernia was mistaken for an abscess; in a number the hernia became incarcerated. Campora has made a special study on cadavers of conditions favoring lumbar hernia. Palpation of a lumbar hernia shows the increase of the tumor during coughing. There may be sharp pain during work, or no pain, and the tumefaction usually subsides as the subject reclines on the other side. Lumbar hernia shows little tendency to become incarcerated, but it may prove important from the standpoint of industrial accidents.

62. **Recurring Rachitis.**—Radice's patient was a boy of 17 with a few skeletal traces of infantile rachitis. He had twelve brothers and all were reputed to be in good health. At the age of 16, while lifting a weight, during his factory work, he had sudden pain in his knees, which grew progressively worse, accompanied by tremor and exaggeration of the reflexes and muscular excitability in general. By exclusion Radice ascribes the disturbances to an upset in the enocrinic system due to the flaring up of his rachitis.

Pediatria, Naples

May, XXV, No. 5, pp. 257-320

64 *Cerebrospinal Meningitis. F. Randone.—p. 257.
65 Pseudohernia from Involvement of Abdominal Muscles in Paralysis Following Poliomyelitis. U. Provinciali.—p. 270.
66 *Pituitary Deficiency in Connection with Adenoids. S. Citelli and P. Caliceti.—p. 278.
67 Present Status of Idiopathic Splenomegaly: Gaucher's Disease. R. Vaglio.—p. 290.

64. **Cerebrospinal Meningitis in Southern Italian City.**—Randone refers to Syracuse where there were twenty-two cases recorded in the last two years. In some cases there were several relapses, with final recovery, but in two the ventricles became involved and the condition was deemed too grave for trephining. The sick were all children from 10 months to 13 years old, with the exception of the father of two of the sick children. He had the disease in a severe form, with relapses. In some exceptional cases the onset was of the septicemic type, the meningeal symptoms not appearing at first. When meningitis is epidemic, lumbar puncture should be done whenever a child is sick with an obscure syndrome. An eruption resembling measles developed in one child during convalescence. When the disease was found to be prevailing, the authorities provided a special hospital for it, and rapid recovery was the rule, only one child in the hospital dying. In every case in which serotherapy was applied early and in adequate doses, at home or in the hospital, recovery was prompt and complete. The only mishaps: three deaths, deafness in one case and squint in another, were in cases that had progressed for some time before a physician saw the child. Randone mentions that an antiserum of Italian origin seemed most effectual, and he suggests that antiserums should be prepared with as many strains as possible, and particularly with meningococci from a recent epidemic. If those from the prevailing epidemic could be utilized, the results might be still better.

66. **Adenoids Entailing Pituitary Insufficiency.**—Provinciali reports three cases of the mental backwardness, weak memory, tendency to drowsiness or insomnia, and inability to concentrate the attention which, combined, form Citelli's syndrome, encountered in persons with adenoids or other affections in the nose and sphenoidal sinus. The disturbances evidently involve the pituitary body in the nasal and sinus trouble. The three cases described were in soldiers, all presenting feminine characteristics, actual pituitary feminism, along with Citelli's psychic syndrome as described above. The three soldiers have the adenoid facies, and are decidedly mentally backward, all of which might have been prevented, it is emphasized, if the adenoids had been removed in time, and this followed, eventually, with pituitary treatment. This might have restored the balance and permitted normal physical and mental development. The temperature reaction in injection of pituitary extract further confirmed the assumption of pituitary deficiency. The roentgenoscopic findings were normal.

Policlinico, Rome

June 3, XXIV, No. 23, pp. 725-756

68 *Factitious Affections in Military Circles. A. Ascarelli.—p. 725. Commenced in No. 22, p. 697.
69 *Factitious Conjunctivitis. M. C. Francaviglia.—p. 735.
70 *Minor Electric Signs of Sciatica. V. Neri.—p. 740.
71 *Test for Detection of Simulation of Total Deafness. G. Bilancioni.—p. 743.

Surgical Section, No. 5, pp. 193-232

72 *Solitary Cysts in the Kidneys. M. Magnini.—p. 193. Commenced No. 4, p. 180.
73 *Gangrene of the Gallbladder; Recovery O. Cignozzi.—p. 213.
74 *War Wounds of the Skull. A. Chiasserini.—p. 219.
75 Varieties of Femoral Hernia. G. Serafini.—p. 230. To be continued.

68-69. **Factitious Affections.**—This number of the *Policlinico* and the one before are devoted to artificially induced lesions and affections of various kinds. Among those with serious by-effects is otitis induced with caustics or boiling oil, etc. Usually only one ear is affected, and there is a history of an old chronic ear trouble. In one case facial paralysis followed, in others complete destruction of the auditory canal and mastoiditis, and in two cases fatal meningitis. Acute conjunctivitis induced by castor-oil seeds, has a peculiar washed-meat aspect.

70. **Minor Electric Signs of Sciatica.**—Neri remarks that sciatica occurs in almost epidemic form among the soldiers in this war. There is scarcely a hospital anywhere without some genuine or imaginary cases of sciatica. Quantitative disturbances in the response to electricity are common even in the early and mild cases of true sciatica. This is tested best on the internal popliteal nerve or the sciatic at the lower margin of the gluteus maximus, closer to the tuberosity of the ischium than to the trochanter.

71. **Simulated Deafness.**—Simulation of deafmutism was detected by Sicard from the man's misspelling of words according to the sound. Bilancioni has encountered some cases of factitious total deafness which resisted all tests and experiments until he succeeded in breaking the volitional inhibition of the malingerer by general anesthesia. Two or three whiffs of ethyl chlorid answered the purpose. This brief and harmless narcosis proved effectual in every instance.

72. **Solitary Cyst in the Kidney.**—Magnini found on exposing the kidney that there were two cysts, both on the convex side, one the size of an egg, the other as large as one's fist. The kidney elsewhere seemed normal, and, instead of the contemplated nephrectomy, he merely evacuated and excised the cysts and sutured together with catgut the lips of each cavity. Neither of the cysts reached to the pelvis. The operation concluded with nephropexy. The patient was a woman of 45 who for two years had had attacks of severe pain in the right kidney region, spreading to the small pelvis, and lasting for about four hours. There was also discomfort and a dull pain in the lumbar regions, and during the last six months a tumor could be palpated in the right hypochondrium, but there was no pyuria or polyuria. The diagnosis had been hydronephrosis. The histologic findings are illustrated and compared with similar cases on record. The data indicate that solitary cysts differ from polycystic kidneys in every respect. The cause is some circumscribed inflammatory process at some part in the kidney parenchyma, not merely a mechanical injury, and the urine may be normal throughout.

73. **Gangrene of the Gallbladder.**—The man of 39 had had two attacks of gallstone colic during the last seven years. The present attack, with vomiting and febrile onset, lasted forty days before the gallbladder was removed. It was gangrenous throughout and contained 205 gallstones, but the absence of adhesions and the other findings indicated that the inflammatory process was of comparatively recent date. The gallbladder was completely covered with omentum; this had prevented the escape of gallstones from the gallbladder.

74. **Skull Wounds.**—Chiasserini analyzes his experience with twenty cases of shell wounds of skull and brain. They emphasize the importance of early and thorough operative treatment, not later than five, eight or ten hours at farthest, if complications are to be warded off.

Riforma Medica, Naples

May 19, XXXIII, No. 20, pp. 533-560

76 *Traumatic Factitious Arthritis of the Knee. A. Mori.—p. 533. Commenced in No. 18, p. 480.
77 Ambrine Not a Specific and Not a Drug; Merely a Protecting Sheath. G. Fabiani.—p. 542.
78 *The Cardiopathology of War. L. Ferrannini.—p. 545.
79 Five-Day Fever. U. Gabbi.—p. 546.

76. **Factitious Arthritis.**—Mori warns that at first it is scarcely possible to distinguish between a true traumatic arthritis and the artificially induced injury. But the course of the case soon shows whether the trouble involves the joint proper or merely the soft parts.

78. **Present Status of War Cardiopathology.**—Ferraninni quotes some recent writers on the question whether recruits with heart disease can be accepted. Weil, Josué and Kramer insist that when the functional capacity of the heart is reduced, even though the heart trouble is excellently compensated, yet the compensation may break down. Compensation is more likely to break during long marches than under emotional stress, etc. Tobacco, alcohol and acute infections are other potent factors. Osler further calls attention to the greater probability in such cases of some slight infection settling on the heart and starting an infectious endocarditis. Weil advocates eliciting the oculocardiac reflex in examining the applicant, as this arrests inorganic murmurs while it renders the organic more prominent. Goodhart urges that all dubious cases should be referred to heart specialists. Parkinson found that over 50 per cent. of ninety soldiers sent back from the front on account of cardiac insufficiency had shown signs of it before enrollment. A number were great smokers; a few had been hard drinkers, and a few had been through exceptionally exhausting fatigue. In only five had the first symptoms developed after an acute infection. In 30 per cent. there was valvular trouble, recognized before enrollment in all but three. He comments on the frequency of latent heart disease among civilians, result of some infection early in life, saying that it might remain latent indefinitely in civilian life but it flares up under the stress of military service. Gunson regards dysentery as responsible for many cases of "soldiers' heart." Cluzet has recently reported interesting studies of electrocardiography of the wounded.

Brazil-Medico, Rio de Janeiro

April 28, XXXI, No. 17, pp. 139-148

80 Injurious Effects of Football under the Age of 18. H. Autran.—p. 139.
81 *Fatal Case of Intestinal Trichocephalosis. A. A. da Matta.—p. 141.

81. **Trichocephalosis.**—The necropsy of the child of 4 showed the ascending and descending colon crowded with specimens of trichocephalus, 123 in all; over 57 per cent. were females. The anemia had been profound and the eggs of the parasites numerous in the stools.

Cronica Medica, Lima

June, XXXIV, No. 648, pp. 189-220

82 *Sarcoma of Fallopian Tube. E. Bello and M. Castañeda.—p. 189.
83 *Injection of Phenol in Treatment of Hemorrhoids. E. Escomel.—p. 192.
84 Factitious Affections from Medicolegal Standpoint. (Simulacion de las enfermedades.) G. F. Davilla.—p. 200.
85 *Mistakes in Diagnosis of Abscess in the Liver. E. Odriozola.—p. 204.
86 Posterior Vertex Presentation Is Unphysiologic. E. F. Odriozola.—p. 211.

82. **Sarcoma in Fallopian Tube.**—The octipara of 40 noticed a small tumor in the lower abdomen in 1915. It could be easily moved around and caused no disturbance for a year. Then profuse and repeated uterine hemorrhages developed, and the tumor increased progressively in size. Before consenting to an operation she waited until the anemia and debility were extreme; coagulation time seven minutes. She was given 500 c.c. saline daily by the drip method, with injection of cacodylate and epinephrin and calcium chlorid by the mouth. The tumor proved to be a round-cell sarcoma in the tube, which measured 19.5 cm. long by 6 cm. wide. Smooth recovery.

83. **Phenol Treatment of Hemorrhoids.**—Escomel gives an illustration of the three instruments he uses in injecting a 20 per cent. solution of phenol in equal parts neutral glycerin and distilled water. (The method was described recently in these columns, May 19, 1917, p. 1514.) He lauds this "medical intervention" as most excellent, superior to all other bloodless methods, while it can be done by any physician. From two to six drops of the phenol solution are injected into each hemorrhoid.

85. **Mistake in Diagnosis of Liver Abscess.**—In Odriozola's case a man of 27 presented symptoms which he diagnosed as indicating a cancer of the liver while necropsy revealed merely a large abscess in the posterior portion of the liver. Among the lessons taught by this blunder are that suppuration in the liver must be excluded in every case of enlargement of the organ, with fever, before any other trouble is even thought of. Abscesses in the convex aspect of the liver are most frequently mistaken for other affections. There may not be the slightest trace of jaundice, and gastrointestinal disturbance is by no means common. Pain in the shoulder occurs early and is acute and persistent, much more than with any other affection. Puncture from the front and side are negative, and when this is the case, puncture from the rear is called for, cautiously avoiding the course of the inferior vena cava. The blood picture is not characteristic, but complications in pleura and lung are most instructive. On suspicion of an abscess, operative treatment is indispensable. Rapid anemia may accompany a simple abscess, as in this case. The condition was so grave when first seen that operative treatment was almost out of the question even if the diagnosis had been correct.

Semana Medica, Buenos Aires

April 26, XXIV, No. 17, pp. 487-510

87 *Pregnancy and Delivery in a Case of Double Uterus. S. F. M. Moreno.—p. 487.
88 Possible By-Effects with Glycarsenobenzol. L. Moss.—p. 490.
89 Chapter from Autobiography. E. R. Coni.—p. 491.
90 Condurango in Therapeutics. S. P. Redondo.—p. 495.
91 Lymphocytosis in Syphilitics. C. P. Mayer and A. C. Gourdy.—p. 500. Continuation.
92 *The Defensive Lipoids. F. M. Urra.—p. 506.

87. **Delivery with Double Uterus.**—Moreno relates that the second uterus behaved the same as the gravid uterus to a certain extent, increasing in size and the cervix passing through a phase of dilatation.

92. **The Defensive Lipoids.**—Urra is chief of the biologic laboratory of Toledo, Spain, and he has made a special study of lipoids, and of cholesterol in particular. The latter is found in abnormal amounts in the blood, he recalls, in all severe toxic processes, as with nephritis and typhoid, the highest point being reached with the turn for the better of the disease. There is also an excess of cholesterol in the blood with atheroma. There is much evidence to prove that cholesterol neutralizes toxins, but that, once neutralized, it forms with them compounds not readily eliminated. As they are unable to escape from the organism, in time they become deposited on the interior of the vessel walls, thus inducing arteriosclerosis. High frequency electric currents by stimulating the organic oxidations may rejuvenate the defensive ferments in the elderly. He adds that, besides arteriosclerosis, cataract and gallstones start with the precipitation of cholesterol. This could not occur if the oxidation processes were constantly lively. Once constituted, treatment is problematic and difficult. Hygiene and avoidance of infections is the only means known to date for warding off hypercholesterolemia with the evil effects of imperfect elimination of the cholesterol from lack of intra-organic oxidations.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

April 14, I, No. 15, pp. 1173-1256

93 The Potassium Ion and the Automatic Work of the Heart. H. Zwaardemaker.—p. 1174.
94 Case of Multiple Small Tumors of the Sweat Glands. (Syringohamartoma multiplex.) W. L. L. Carol.—p. 1183.
95 *Uremia in Cholera. W. Valk and C. D. de Langen.—p. 1190.
96 Narcolepsy in Young Woman. G. C. Bolten.—p. 1196.

95. **Uremia in Cholera.**—The retention of nitrogen in the thirty-four cases tabulated amounted to from 3.31 to 5.9 gm.

urea per liter of the blood serum in 50 per cent. of the patients. In ten others it ranged from 1.75 to 2.72 and in only seven was below this. In another group of four cases Ambard's constant was calculated from the urine and blood. The retention of nitrogen in 50 per cent. was thus higher than the figures obtained even with contracted kidney. The communication, which issues from the public hospital at Batavia, emphasizes that there was no intake of nitrogenous food by the cholera patients and the decline in weight from the loss of fluids and the thickening of the blood does not suffice to explain this extreme uremia. There must have been formation of urea from the albumin of the body. All the patients died that had this high nitrogen blood content. In two dubious cases, with no vibrios to be found, the high urea content of the blood confirmed the diagnosis. In one the uremia declined and recovery was anticipated and occurred. In the other, two days later the retention had reached a higher figure, and death soon followed.

Hospitalstidende, Copenhagen

May 30, LX, No. 22, pp. 521-548

97 *Alimentary Glycosuria in Rats with Hypoglycemia. V. Schmidt. —p. 521.

98 *The Consciousness during Stupor. A. Wimmer.—p. 527. Commenced in No. 21, p. 497.

97. **Alimentary Glycosuria in Rats.**—Schmidt tabulates the findings in two groups of rats. One strain showed hyperglycemia to begin with, but both presented alimentary glycosuria on feeding with carbohydrates.

98. **The Consciousness during Stupor.**—Wimmer refers to the stupor of psychic origin, such as epileptic seizures, drunkenness, catatonia, etc. It is often surprising to find what a clear appreciation and understanding of what has been going on are displayed by persons rousing from a period of catatonia during which they lay like a lifeless statue with closed eyes. He describes with much detail a case of this kind. It shows that certain catatonia symptoms, when we know their psychogenesis, lose their diagnostic importance. As a rule, however, the period of stupor is a blank in the memory.

Hygiea, Stockholm

May 16, LXXIX, No. 9, pp. 417-464

99 *Gallstones and Indications for Operative Treatment. L. Wolff. —p. 417.

100 *Gangrene of the Thumb after Application of Compound Solution of Cresol. S. von Stapelmohr.—p. 438.

99. **Gallstone Colic and Indications for Operative Treatment.**—Wolff remarks that in the few cases of gallstone colic in his practice in which the symptoms at the first attack were so severe that operative measures were inevitable, he always found a complicating acute pancreatitis. He emphasizes further that acute gallstone trouble and acute appendicitis have to be treated on different principles. The first attack of cholecystitis is seldom severe; gangrenous inflammation of a previously sound gallbladder does not occur easily. The temperature must be taken in the rectum, as sweating and collapse may reduce the temperature of the skin; 104 F. indicates severe infection, but the latter may occur with moderate temperature. The persistence of high temperature speaks for serious conditions. A single chill and transient fever do not call for an operation, but recurring chills and persistent fever demand it, as also a rapid weak pulse, pronounced local muscular resistance, persistent pains and tenderness not banished by a second and third dose of morphin (0.01 gm.).

He quotes a writer to the effect that on suspicion of the gangrenous form the operation must be done at once as we would rush to save a drowning man without asking whether he wanted to be saved or not. The least suspicion of pus in the gallbladder should be regarded as a relative indication for an operation, with the patient's consent, as the organ thus affected rarely recuperates entirely and there is always danger of further and more serious trouble. Contrary to the indications with appendicitis, castor oil is advised. If this abolishes completely the painfulness of the gallbladder, this shows that the gallstone trouble is tending to a latent phase. In about 80 per cent. of the cases, the cholecystitis is of the serous type, and under internal treatment it may subside into a lifelong latent phase. With this the fever and jaundice are transient, the pain is bearable and is relieved more or less with morphin, and the general condition is not so grave. If the course turns for the worse, delay in operating is not so dangerous as with appendicitis. An early operation, even with the gangrenous form, has given only 2 or 3 per cent. mortality; after perforation has occurred the mortality has been 17 per cent. or more. In conclusion he reiterates that internists must learn to call on the surgeon in the moderate cases so that he may be ready to intervene at the proper moment, instead of postponing this until the surgeon has to contend with excessively grave conditions.

100. **Compound Solution of Cresol Gangrene.**—Stapelmohr reviews the literature on carbolic (phenol) gangrene and reports a case in which the terminal phalanx of the thumb sloughed off and had to be amputated after application of a 5 per cent. dilution of compound solution of cresol. It had been applied by the patient herself, the thumb dressed with it for a total of twelve hours and then submerged in the solution for two hours longer, the fifth day after a cut.

Ugeskrift for Læger, Copenhagen

May 10, LXXIX, No. 19, pp. 727-770

101 *Transient Partial Heart Block. (Forbigaaende Atrieflagren.) C. Schwensen.—p. 727; (Forbigaaende Atrieflimren.) C. Schwensen.—p. 740.

102 *Relative Economic and Physiologic Rôle of the Dietary in Different Classes of the Populace. M. V. Bjørum and P. Heiberg.—p. 744.

103 *Relative Cost of Food near the Basal Minimum. M. V. Bjørum and P. Heiberg.—p. 748.

104 *Relative Cost of Food in Towns in Denmark and Sweden. P. Heiberg.—p. 751.

101. **Transient Heart Block.**—Schwensen describes in minute detail two cases of auricular flutter of rheumatismal origin, and reviews the history of this anomaly, the diagnosis and treatment. His first patient was a typical example of a slight organic disturbance in the bundle of His associated with high vagotony. The latter was responsible for the extreme degree of the partial heart block. The effect of digitalis and of atropin confirmed this diagnosis. The patient was a iii-para of 50. She had a little dyspnea on exertion and sometimes she suddenly and briefly lost consciousness after exertion, and felt distressed afterward, with palpitations of the heart, but there was no tendency to edema.

The second patient was a clerk of 24, and digitalis in small doses increased the degree of heart block and thus slowed up the ventricle beat. This allowed the heart muscle a chance to rest between the contractions. The diagnosis in both cases was based on the comparison of the radial pulse and the auscultation findings, the heart beat keeping time with the pulse. If there had been extrasystoles, a contraction would have been heard in the long pause. The diagnosis of auricular flutter would not have been positive without the electrocardiograms; fifteen are reproduced. The slight organic trouble in the bundle of His-Tawara is liable to become aggravated with any intercurrent infection which renders the outlook grave.

Schwensen describes further a case of auricular fibrillation occurring in a married laboring man of 32 during and after a severe attack of pneumonia followed by bilateral parotitis. After a brief period of tachycardia combined with functional heart block the symptoms of auricular fibrillation developed and persisted for two weeks. Then the normal auricle beat returned suddenly. Treatment had been with camphor and caffein. Evidently there had been no organic trouble, the fibrillation being merely a toxic phenomenon.

102-104. **Cost of Dietaries According to Income.**—Bjørum and Heiberg give a number of tables showing cost and calories of the food classified by the incomes. They show that statistics in this line are of little value unless the income is taken into account. Bread is the regulator, the poorer getting their calories from a larger proportion of bread. Comparison of conditions as to calories and prices in a Swedish and a Danish town showed better conditions in the latter.